ALASKA DEPARTMENT OF FISH AND GAME

JUNEAU, ALASKA

STATE OF ALASKA
Bill Sheffield, Governor

DEPARTMENT OF FISH AND GAME
Don W. Collinsworth, Commissioner

DIVISION OF GAME
W. Lewis Pamplin, Jr., Director
Robert A. Hinman, Deputy Director

ANNUAL REPORT OF SURVEY-INVENTORY ACTIVITIES

PART I. BLACK BEARS AND BROWN BEARS

Edited and Compiled by
Joann A. Barnett, Publications Technician

Volume XIV

Federal Aid in Wildlife Restoration

Project W-22-1 and W-22-2, Job 17.0 and 4.0

(Printed March 1984)

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CONTENTS


ARCTIC OCEAN
ALASKA
GAME MANAGEMENT UNITS
26
23
25
24
22
22
21
20
18
19
16
14
13
12
11
17
15
7
6
5
1
18
JUNEAU
GULF OF ALASKA
9
4
3
10
8
2
10
Aleutian Islands
10

Statewide Harvest and Population Status

Black Bear

While black bears occur widely in the State, sealing is required only in Units 1-7, 11-16, and 20. Harvest data are therefore available in those Units. These data show that 1,011 black bears were taken in 1982, with Unit 20 (145 bears), Unit 6 (137 bears), and Units 7 and 15 (125 bears) recording highest harvests. Harvests were above average in GMU's 1A, 1C, 2, 3, 5, 6, and 12, but lower in Unit 16.

In all cases, ages and/or skull sizes indicated that populations were healthy and harvests within acceptable limits. Although we do not have quantifiable population data, black bear populations appear at least stable and capable of sustaining this level of use or greater.

Brown/Grizzly Bear

In general, brown/grizzly bear populations in the State were at relatively high levels and stable or increasing. Curtailment of harvests through permit systems was apparently effective in Unit 19 and in the Brooks Range; populations in these areas are probably increasing.

Legal harvests of brown/grizzly bears in 1982 totaled 819 bears. Harvests were generally stable compared to previous years, except in Unit 19 where the reduction was caused by the permit system. As usual, the highest harvests came from Unit 9 (210 bears), Unit 8 (149 bears), and Unit 13 (80 bears). Although regulations require sealing of all bears taken, noncompliance with sealing requirements remains a significant problem in rural areas.

Robert A. Hinman
Deputy Director

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1A AND 2

GEOGRAPHICAL DESCRIPTION: Ketchikan Area and Prince of Wales Island

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

The black bear population in Subunit 1A and Unit 2 appears stable, as indicated by harvest parameters, hunter success, and general observations. Average skull size of males taken during spring seasons has remained relatively constant since 1975, and there still is a prevalence of males in the spring harvest.

Population Composition

No data were available.

Mortality

The reported harvest for 1982 was 35 black bears from Game Management Unit 1A and 111 from Game Management Unit 2 (Table 1). Two additional bears were taken in defense of life or property.

The Subunit 1A harvest increased 40% from the 25 bears taken in 1981, while the harvest for Unit 2 increased 61%.

Seasons since 1974 are summarized in Table 2. During the 1A season, 18 bears were taken from Revilla and surrounding small islands; 9 were taken on the mainland. In Unit 2, 78 bears were taken in the spring. The corresponding 1981 Unit 2 harvest was 46 bears. These represent substantial increases in the spring harvest for both Prince of Wales and Revilla Islands over historical levels (Table 2).

Percentage of males harvested in the spring season in Subunit 1A was 93% males, essentially the same as the 1974-81 average. In Unit 2, the percentage of males in the spring harvest for 1982 was 90, slightly above the long-term average of 88% males.

The fall harvest in Subunit 1A went from 7 bears in 1981 to 8 bears this year. Five of the 8 bears were males. In Unit 2, the 1982 fall harvest of 33 bears was up substantially from the 23 taken in 1981. The harvest was 61% males, about the same as the past 5-year average of 60%.

In Subunit 1A, 77% of the kill occurred during the spring season, with 70% of the spring bears taken from 21 May-10 June (Table 3). In Unit 2, 70% of the harvest occurred in spring, with 62% of the bears taken from 11-31 May.

The peak of the spring harvest in Subunit 1A generally occurs about 10 days later than the peak of the harvest in Unit 2. In both GMU's, the peaks seem to occur up to 10 days earlier following mild winters.

Transportation used by bear hunters to reach hunting areas changed somewhat from last year (Table 1). In Subunit 1A this year, 49% of the bear hunters used boats, 49% used aircraft, and 3% hunted from a road system. In Unit 2, where the logging roads are more extensive, 50% used road vehicles, 27% used airplanes, and 23% traveled by boat.

The harvest along the road system in Unit 2 appears to increase following mild winters when food is widely available in areas away from the beach. Following severe winters, bears are concentrated along beaches and are not readily available along the road system.

The percentage of harvest by nonresidents varies from year to year, but the trend appears stable. Nonresidents took 40% of the bears from Subunit 1A and 34% of those from Unit 2. Sixty-five percent of the 52 bears taken by nonresidents were taken during the spring season.

Ten percent of the bears taken during the spring season were considered incidental, while 8% of the fall bears were taken incidentally to other activities. Normally, the fall season has a higher percentage of incidental harvest.

Forty-eight percent of the successful spring bear hunters, and 49% of the fall hunters saved some or all of the meat from their bears.

Skull measurements once again showed that considerably larger bears are taken on Prince of Wales Island (Unit 2) than in Subunit 1A. In Unit 2, 74 males averaged 19.0 inches; in 1A, 29 males averaged 17.6 inches. Comparable figures for 1981 were 18.5 inches for 46 males from Unit 2 and 17.6 inches for 19 males from Subunit 1A. Male skull sizes have remained fairly constant for the past 6 years (Table 2). Age data for bears taken since 1978 are not available.

The 146 bears reported for 1982 from GMU's 1A and 2 were taken by 128 hunters; 18 hunters took 2 bears each. Two cinnamon bears were taken in 1982. There is some selectivity for the cinnamon color phase on the mainland where it occurs.

Management Summary and Recommendations

The 1982 black bear harvest for Subunit 1A was 21% above the long-term average, while the Unit 2 harvest rose 73% over the long-term average. There is no ready explanation for this large increase in the Unit 2 harvest. The harvest in both Units will probably gradually increase as the human population grows and more and better access is created, particularly on Prince of Wales Island. Increased logging activity, State maintenance of more roads, and better ferry connections will all increase hunting pressure on Prince of Wales Island.

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Table 1. Black bear harvest statistics for GMU's 1A and 2, 1982.

GMU	Season	Total kill	No. males	No. females	Unk. sex	Kill by nonres. (%)	Mean skull size, male		Mean skull size, female		% cinn.[a]	% transport used		
												Air	Boat	Roads
1A	Spring	9	8	1	0	4(44)	17.8[b]	(8)[c]	16.7	(1)	22	33	67	0
Mainland	Fall	7	5	1	1	5(78)	17.0	(5)	16.4	(1)	0	100	0	0
	Totals	16	13	2	1	9(56)	17.5	(13)	16.5	(2)	13	63	38	0
1A	Spring	18	17	1	0	5(28)	17.8	(16)	15.4	(1)	--	39	56	6
Revilla	Fall	1	0	1	0	0	0.0	0	17.3	(1)	--	0	100	0
	Totals	19	17	2	0	5(26)	17.8	(16)	16.3	(2)	--	37	58	5
Total 1A	Spring	27	25	2	0	9(33)	17.8	(24)	16.0	(2)	--	37	59	4
	Fall	8	5	2	1	5(63)	17.0	(5)	16.8	(2)	--	88	13	0
	Totals	35	30	4	1	14(40)	17.6	(29)	16.4	(4)	--	49	49	3
2	Spring	78	70	8	0	25(32)	19.2	(58)	17.3	(8)	--	29	22	49
	Fall	33	20	13	0	13(39)	18.2	(16)	17.2	(12)	--	21	24	55
	Totals	111	90	21	0	38(34)	19.0	(74)	17.2	(20)	--	27	23	50

[a] Cinnamon phase occurs only on mainland.
[b] Size in inches.
[c] ( ) = Sample size.

Table 2. Black bear harvest by season with sex ratios and skull sizes for GMU's 1A and 2, 1974-1982.

GMU	Year	Season	Total kill	% males	Mean skull size, male		Mean skull size, female	
1A	1974	Spring	34	94	--	--	--	--
		Fall	13	62	--	--	--	--
		Year	47	83	17.8[a]	(36)[b]	15.2	(5)
1A	1975	Spring	27	89	17.3	(21)	16.3	(3)
		Fall	6	67	16.9	(4)	16.4	(1)
		Year	33	85	17.2	(25)	16.3	(4)
1A	1976	Spring	22	95	17.7	(21)	15.1	(1)
		Fall	5	80	18.1	(4)	16.5	(1)
		Year	27	93	17.8	(25)	15.8	(2)
1A	1977	Spring	9	100	17.7	(9)	--	--
		Fall	7	57	13.7	(1)	15.4	(3)
		Year	16	81	17.3	(10)	15.4	(3)
1A	1978	Spring	15	87	18.2	(11)	15.8	(2)
		Fall	9	67	17.4	(5)	16.2	(3)
		Year	24	79	18.0	(16)	16.0	(5)
1A	1979	Spring	27	93	17.8	(24)	15.6	(1)
		Fall	3	33	--	--	17.1	(1)
		Year	30	87	17.8	(24)	16.4	(2)
1A	1980	Spring	19	100	17.8	(18)	--	--
		Fall	8	38	16.1	(2)	15.7	(4)
		Year	27	81	17.6	(20)	15.7	(4)
1A	1981	Spring	18	94	17.7	(16)	14.6	(1)
		Fall	7	71	16.9	(3)	14.5	(1)
		Year	25	88	17.6	(19)	14.5	(2)
1A	1982	Spring	27	93	17.8	(24)	16.0	(2)
		Fall	8	63	17.0	(5)	16.8	(2)
		Year	35	86	17.6	(29)	16.4	(4)
2	1974	Spring	22	77	--	--	--	--
		Fall	5	60	--	--	--	--
		Year	27	74	19.1	(15)	16.2	(2)
2	1975	Spring	27	93	19.5	(24)	17.5	(1)
		Fall	15	53	18.8	(7)	16.5	(5)
		Year	42	79	19.3	(31)	16.6	(6)

Table 2. Continued.

GMU	Year	Season	Total kill	% males	Mean skull size, male		Mean skull size, female	
2	1976	Spring	61	87	19.4	(50)	16.8	(6)
		Fall	18	61	17.5	(8)	16.8	(7)
		Year	79	81	19.1	(58)	16.8	(13)
2	1977	Spring	34	85	19.0	(28)	17.2	(4)
		Fall	17	65	19.5	(5)	15.9	(4)
		Year	51	78	19.1	(33)	16.5	(8)
2	1978	Spring	44	89	19.3	(39)	17.5	(2)
		Fall	23	57	18.7	(11)	16.5	(7)
		Year	67	78	19.2	(50)	16.7	(9)
2	1979	Spring	47	98	19.1	(42)	17.6	(1)
		Fall	23	61	18.4	(8)	16.9	(8)
		Year	70	86	19.0	(50)	17.0	(9)
2	1980	Spring	47	89	19.3	(35)	17.0	(3)
		Fall	26	54	19.0	(13)	17.2	(9)
		Year	73	77	19.2	(48)	17.2	(12)
2	1981	Spring	46	85	18.6	(33)	16.7	(7)
		Fall	23	78	18.0	(13)	15.4	(3)
		Year	69	83	18.5	(46)	16.3	(10)
2	1982	Spring	78	90	19.2	(58)	17.3	(8)
		Fall	33	61	18.2	(16)	17.2	(12)
		Year	111	81	19.0	(74)	17.2	(20)

[a] Size in inches.

[b] ( ) = Sample size.

Table 3. Chronology of the 1982 black bear harvest, GMU's 1A and 2.

Date	Subunit 1A	Unit 2
1-20 Apr	--	--
21-30 Apr	--	5
1-10 May	2	15
11-20 May	5	22
21-31 May	10	26
1-10 Jun	9	9
11-20 Jun	1	1
1-10 Sep	4	10
11-20 Sep	--	5
21-30 Sep	2	1
1-10 Oct	2	4
11-20 Oct	--	4
21-31 Oct	--	3
1-10 Nov	--	2
11-20 Nov	--	3
1-10 Dec	--	1

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1B and 3

GEOGRAPHICAL DESCRIPTION: Subunit 1B - Southeast Mainland from Cape Fanshaw to Lemesurier Point

Unit 3 - Islands of the Petersburg, Kake, and Wrangell Areas

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

No census activities were conducted during the report period, but field observations indicated a good population of black bears in Subunit 1B and Unit 3. The age and sex structure of harvested bears indicates a healthy population with no evidence of excessive harvest.

Population Composition

Ages of 63 of the 84 black bears taken in Unit 3 (75%) were determined using the cementum annuli technique. The average age of both sexes was 7.7 years. Males averaged 7.8 years; females averaged 6.3 years. A total of 44 of the aged bears (69.8%) were $\geq$5 years. The harvest of females was low, with males composing 86% of the total harvest (Fig. 1). Table 1 shows the sex composition by island. According to Bunnell and Tait (1981), a high proportion of females and young-age classes in bear populations indicates excessive harvests. Although hunter selectivity biases the harvest toward males and animals of older age classes, it appears that Unit 3 black bear harvests are moderate.

Mortality

In Subunit 1B, the 1982 sport harvest was 7 bears, all males. Five bears (71%) were taken during the spring, and 2 (29%) were taken during the fall hunt. Five Subunit 1B black bears were taken within the boundaries of the Stikine-LeConte Wilderness Area.

In 1982, the reported sport harvest was 84 black bears from Game Management Unit 3. This was the highest since the sealing program began, and was an increase of 18 (27%) over last year's take of 66 bears (Fig. 2). Males accounted for 86% of the total, an indication of a healthy population. Studies in Michigan (Erickson et al. 1964) and Oregon (Lindzey and Meslow 1977) showed 48% and 64% males in the kill, respectively. Nonresident hunters accounted for 38% of the Unit 3 black bear harvest as compared with 24% in 1981. The number of successful nonresidents increased 100% from the previous year (from 16 to 32). Fig. 3 shows the annual nonresident take since 1974. Eighty-four percent of the bears taken by nonresidents and 79% killed by residents were taken during spring. The total spring take for Unit 3 was 68 bears (81%), while the fall take was 16 (19%) (Table 1).

Six percent of the spring harvest occurred in April, 75% in May, and 19% in June. The peak of the harvest was 8-18 May, during which 32% of the annual harvest occurred. During the fall, 69% were taken in September, 19% in October, and 12% in November.

From 1974 through 1982, the bear harvest on Kuiu Island accounted for over half of the Unit 3 total, while the average was only 28% during the 1980-1982 period (Table 2). The closing of a logging camp on Kuiu Island in the late 1970's probably is responsible for the decline in harvest. A recent State land sale and subsequent increase in residents is expected to increase the bear harvest on Kuiu Island.

The highest kill per unit area occurred on Mitkof Island, where a bear was taken for each 16.2 sq mi of area. Mitkof Island has an extensive road system built by the Forest Service for logging activities, and almost every part of the island is accessible by vehicle. Table 3 indicates the relative unit area per bear harvested for 5 major islands in Unit 3.

The average skull size for all Unit 3 males was 18.4 inches, while females averaged 15.7 inches (Table 1). A male from Kupreanof Island was the largest, with combined length and width measurements of 21.0 inches. Table 1 shows average skull measurements by island and season.

Management Summary and Recommendations

Although the Unit 3 bag limit was reduced from 2 black bears to 1 in 1980, the harvest increased from 37 in 1980, to 66 in 1981, and to 84 in 1982. The average annual black bear harvest in Unit 3 from 1974 through 1982 was 49. Populations in both GMU's 1B and 3 are considered stable. Older age classes and males are still prevalent in the harvest. A viable black bear census technique is needed to determine bear numbers and population trends. An increase in bag limit to 2 bears should be considered for Unit 3.

Bear harvest can be expected to increase as State subdivisions are developed on Kuiu, Wrangell, Etolin, Mitkof, and Kupreanof Islands.

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Fig. 1. Ages of black bears harvested in Unit 3, spring 1983.

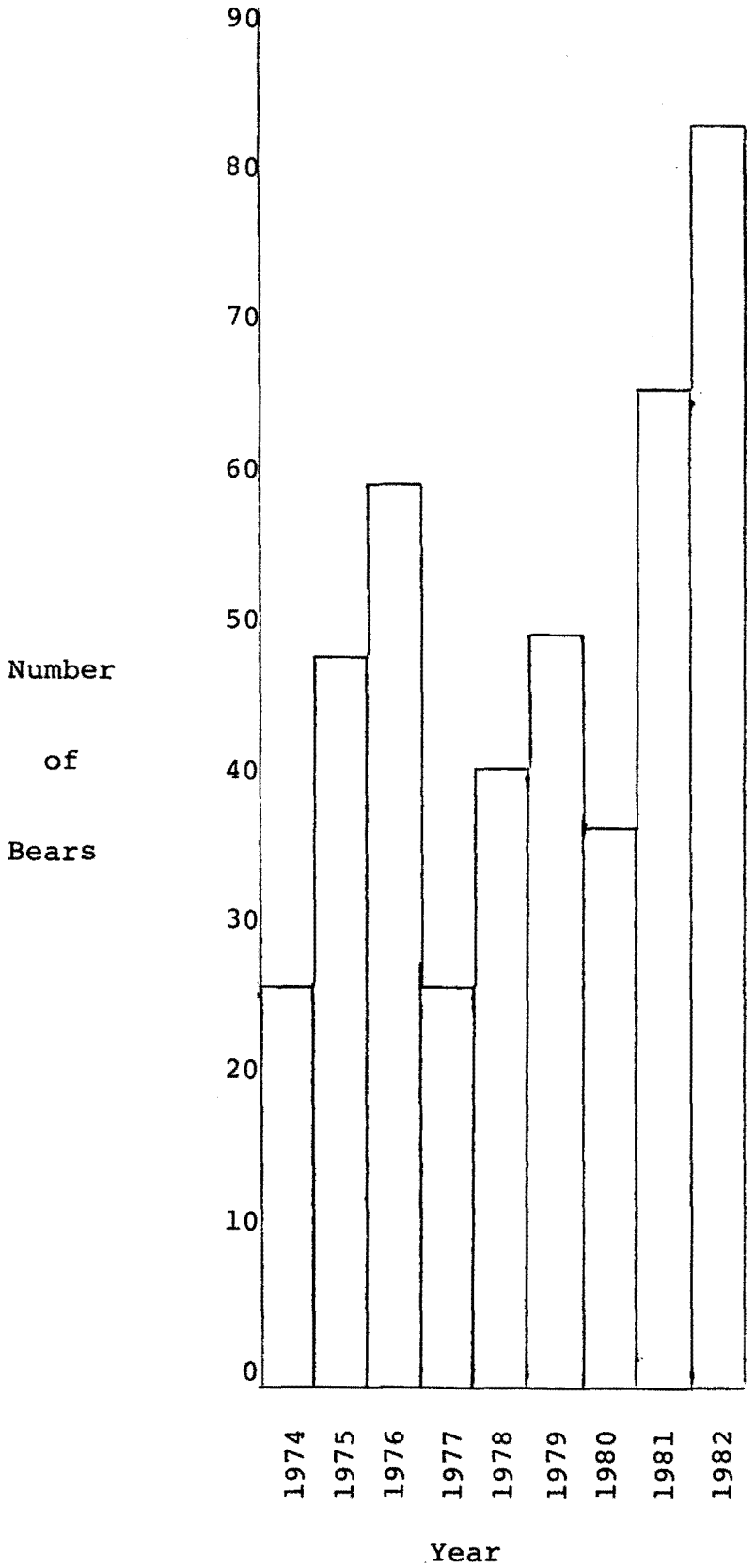

Fig. 2. Annual Unit 3 black bear harvest, 1974-82.

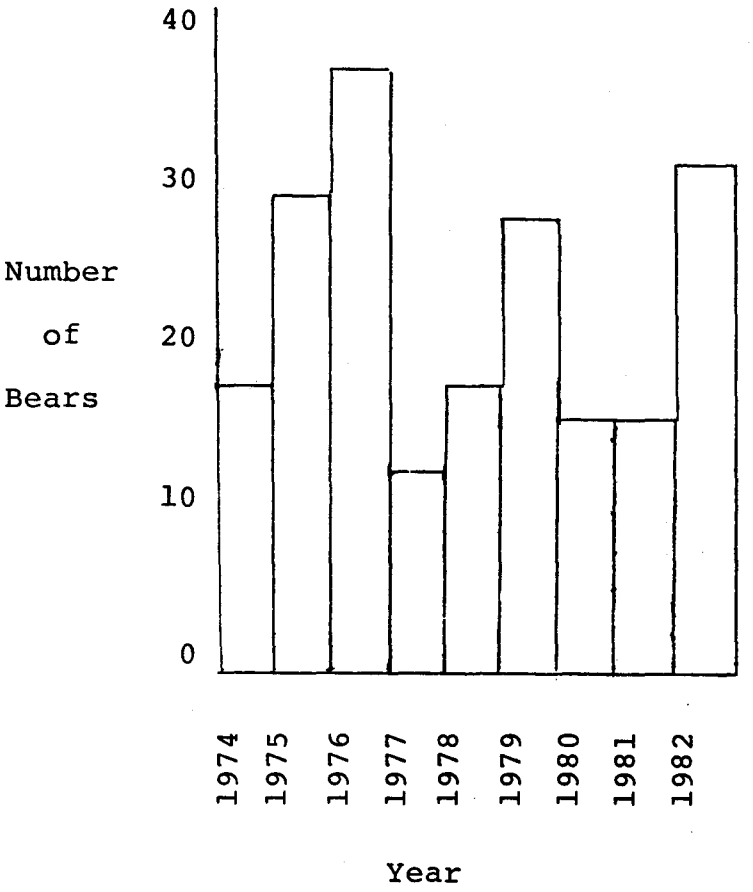

Fig. 3. Unit 3 black bear harvest by nonresident hunters, 1974-82.

Table 1. Black bear harvest by location, sex, mean skull size, and season of year, 1982.

Location	Season	No. males	Mean skull size[a]	No. females	Mean skull size[a]	No. unk.	Total bears	% of Unit 3 harvest
Kupreanof Island	Spring	30	18.6	2	16.0	--	32	
	Fall	1	19.4	--	--	1	2	
	Total	30	19.0	2	16.0	1	34	40.5
Kuiu Island	Spring	19	19.1	5	16.1	--	24	
	Fall	8	17.8	2	16.3	--	10	
	Total	27	18.8	7	16.2	--	34	40.5
Mitkof Island	Spring	10	17.3	2	14.3	--	12	
	Fall	--	--	--	--	1	1	
	Total	10	17.3	2	14.3	1	13	15.5
Wrangell Island	Spring	--	--	--	--	--	--	
	Fall	2	16.4	--	--	--	2	
	Total	2	16.4	--	--	--	2	2.4
Woronkofski Island	Spring	--	--	--	--	--	--	
	Fall	1	19.9	--	--	--	1	
	Total	1	19.9	--	--	--	1	1.2
Total Unit 3	Spring	59		9		--	68	
	Fall	12		2		2	16	
	Total	71		11		2	84	100.0

[a] Size in inches.

Table 2. Percentage of annual Unit 3 black bear harvest by island, 1974-1982.

Year	Total harvest	Kupreanof (%)	Kuiu (%)	Mitkof (%)	Wrangell (%)	Other islands (%)
1974	27	18	61	4	10	7
1975	49	25	63	4	4	4
1976	60	33	57	3	2	5
1977	27	15	77	4	0	4
1978	41	29	62	7	0	2
1979	50	31	52	4	4	9
1980	37	40	22	32	3	3
1981	66	38	24	32	5	1
1982	84	41	41	16	2	1
Averages	49	30	51	11	3	5

Table 3. Unit 3 black bear harvest by island, 1982.

Island	Area (mi^2)	Harvest	Sq mi/ bear	No. males	No. females	% of total harvest
Kupreanof	1,090	34	32.1	31	3	40.5
Kuiu	746	34	21.9	27	7	40.5
Mitkof	211	13	16.2	10	3	15.5
Wrangell	220	2	110.0	2	0	2.4
Woronkofski	23	1	23.0	1	0	1.1
Totals	2,290	84		71	13	100.0
Mean			27.3			

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1C

GEOGRAPHICAL DESCRIPTION: Mainland Portion Between Cape Fanshaw and the Latitude of Eldred Rock

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

No data were collected. However, populations appear stable.

Population Composition

No data were collected.

Mortality

The black bear harvest (based on sealing documents) for 1982 in Subunit 1C was 72 bears (59 males, 12 females, and 1 of unknown sex), double the 1981 harvest and the highest reported since 1974. The harvest included 8 black bears of the cinnamon color phase. Residency of successful black bear hunters in 1982 was 62 (86%) residents and 10 (14%) nonresidents. Guided hunts in 1982 accounted for 6 bears (8% of the total sport-kill harvest), all taken by nonresidents. The reported nonsport kill was 2 bears, both males.

In Subunit 1C in 1982, the average skull size of males ($\underline{N}$ = 57) was 17.3 inches and females 15.7 inches ($\underline{N}$ = 10). The average male skull size ($\underline{N}$ = 29) in 1981 was 16.9 inches (erroneously reported as 20.4 inches in S&I Report, Vol. VIII, Part I). Age data for bears killed in 1982 were not available.

Chronology of the harvest in 1982 showed that 87% (63 bears) of the harvest occurred during the spring season, 87% of which were males. The remaining 9 bears were all taken in September, of which 44% were males.

Successful hunters (days hunted were unknown for 3 hunters) spent a total of 185 days hunting black bear, averaging 2.7 days/bear. Days hunted per bear ranged from 1 to 12 days.

Distribution of the harvest in Subunit 1C in 1982 showed the Chilkat Range as the highest harvest area ($\underline{N}$ = 27), followed

closely by Berners Bay to Bishop Point with 26 bears. In the remainder of the Unit (Point Bishop to Cape Fanshaw), 19 bears were harvested.

Modes of transportation used by successful hunters were as follows: boat (68%), foot (14%), vehicle (8%), aircraft (6%), and other (4%).

Management Summary and Recommendations

The reported harvest of 72 black bears in 1982 in Subunit 1C was the highest recorded since 1974, double the 1981 harvest and 18 greater than the 1974-81 average annual harvest of 44 animals. Despite this increase, percentage of males in the harvest (82%) remained stable compared to previous years, suggesting that bear populations were in good condition in 1982. Weather conditions, which may affect the availability of bears and hunter pressure particularly during the spring portion of the season, appear to be the major factor affecting harvest levels in Subunit 1C. Since spring 1982 was later and colder than "normal," greater numbers of bears were probably forced to feed on green vegetation along beaches where they were more vulnerable to hunters.

No changes in season or bag limit were recommended.

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BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1D

GEOGRAPHICAL DESCRIPTION: Mainland Portion North of the Latitude of Eldred Rock

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Although data are lacking to determine an accurate population trend, it is believed that no significant changes occurred during the report period.

Population Composition

No data were collected.

Mortality

During 1982, the sport harvest was 22 bears (16 males, 6 females). This harvest is double last year's harvest of 11 bears, but is comparable with the average of 18.1 bears/year taken in the past 7 years.

The average skull size for 14 males harvested was 17.4 inches (range 15.8 to 19.3) and that for the 4 females was 15.3 inches (range 15.1 to 16.8).

No nonsport mortality was known to have occurred during this report period.

Management Summary and Recommendations

The Subunit 1D black bear population appears stable. Based on general observations and hunter interviews, no changes in seasons or bag limits were recommended.

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BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 5

GEOGRAPHICAL DESCRIPTION: Yakutat and Malaspina Forelands, Russell Fjord, Gulf of Alaska

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Current data are insufficient to assess population trends; however, no major changes in population status have been observed or reported during this period. Unitwide, the black bear population appears stable.

Population Composition

No specific surveys were conducted during this report period. All data presented are the result of hunter/guide interviews, sealing certificates, and general observations.

Mortality

Total sport kill for Unit 5 during this report period was 31 bears (17 males, 13 females, 1 unknown). This represents a 63% increase in harvest over last year's kill and a 100% increase above the average for the preceding 11-year period (N = 172, $\bar{x}$ = 15.6, range 3 to 23). The sex composition of the kill, however, was comparable with the historic harvest (Table 1). Ninety-four percent of the harvest occurred during the spring segment of the season.

Sixty-one percent of the bears were killed by nonresidents, while the remaining 39% were harvested by residents. There were 3 blue phase bears taken, double the 1.5 bears/year annual average for the Unit, but fewer than the high harvest of 4 glacier bears taken in 1979.

Management Summary and Recommendation

The black bear population appears to be stable Unitwide, and production appears to be good. The hunting pressure seems to

remain fairly constant from year to year, but harvest levels fluctuate considerably. This fluctuation is most likely due to the wide variability in spring weather and the resultant change in the timing of leaf out. Guides plan their 1st hunt to begin about the same time each season; and if spring comes early or late any given year, the harvest can differ from the "average."

However, given the major increase in harvest for this report period the black bear kill should be monitored closely in the future to determine what factors are responsible for the increase in harvest. An increasing black bear population, an increase in hunting pressure, or simply a fluctuation due to bear availability based on good spring hunting conditions all could modify harvest levels.

No change in season or bag limit was recommended.

PREPARED BY:

Ronald E. Ball
Game Biologist III

SUBMITTED BY:

Donald E. McKnight
Regional Supervisor

Table 1. Game Management Unit 5 black bear harvest, 1971-82.

Year	Total kill	No. males	No. females	No. unk.	Color phase	
					Black	Blue
1971	3	3	0	0	3	0
1972	17	12	5	0	15	2
1973	19	12	7	0	18	1
1974	9	6	3	0	8	1
1975	12	8	2	2	10	2
1976	19	19	0	0	17	2
1977	19	11	2	0	12	1
1978	10	6	0	2	7	1
1979	22	12	9	1	18	4
1980	23	13	5	0	15	3
1981	19	12	5	2	17	2
1982	31	17	13	1	28	3

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 6

GEOGRAPHICAL DESCRIPTION: Prince William Sound and North Gulf Coast

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Sufficient data to determine current status or trend of black bears in Unit 6 were not available.

Population Composition

No data were available.

Mortality

There were 119 bears killed during the spring and 18 bears killed during the fall seasons. Most of the harvest occurred during May when 95 (69%) bears were taken and June when 23 (17%) were taken.

Distribution of the harvest by sex is presented in Table 1 and shows that most of the bears killed were males (82%) and most of the harvest occurred in Valdez Arm and northern Prince William Sound (85%).

Cementum ages for black bear killed during the 1982 seasons were not available. Mean skull sizes (an indicator of age) show that male skulls averaged 16.7 inches, similar to last year (16.8 inches), and female skulls averaged 15.1 inches, which was also similar to last year (15.5 inches). Males constituted 75% of the harvest, and nonresident hunters took 33% of the bears.

Management Summary and Recommendations

The harvest of 137 black bears is 27 bears above the 9-year average of 110 animals. Characteristics of the harvest are within the normal range of annual fluctuations, i.e., magnitude of harvest, percentage of males, male and female skull sizes, and chronology of harvest.

No regulatory changes were recommended.

PREPARED BY:	SUBMITTED BY:
Julius L. Reynolds	Leland P. Glenn
Game Biologist III	Survey-Inventory Coordinator

Table 1. Unit 6 black bear harvest by area and sex, 1982.

Unit/subunit[a] Area	No. male	No. female	No. unk.	Total	%
6-01 East of Copper River to Icy Bay	10	1	1	12	8.8
6-02 Cordova to Copper River	4	1	0	5	3.7
6-03 Tatitlek to Cordova	8	1	1	10	7.3
6-04 Valdez Arm	24	9	3	36	26.3
6-05 Esther Island to Valdez Arm	28	4	2	34	24.8
6-06 Port Wells	11	3	1	15	11.0
6-07 Passage Canal to Port Nellie Juan	2	2	1	5	3.7
6-08 Port Nellie Juan to Cape Fairfield	10	1	3	14	10.2
6-09 Naked Island	0	0	0	0	0.0
6-10 Unit 6, unknown	5	0	0	5	3.7
6-11 Knight Island	1	0	0	1	0.7
Totals	103	22	12	137	100.2
Percents	75.2	16.1	8.8	100.1	

[a] Management subunits designated for research purposes.

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 7 and 15

GEOGRAPHICAL DESCRIPTION: Kenai Peninsula

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Black bears are abundant and widely distributed on the Kenai Peninsula. Research conducted in portions of Subunit 15A indicated a relatively high density of 1.5 black bears/km^2 of suitable habitat (Schwartz et al. 1981). Observations by Department personnel and hunters also have suggested that black bears are abundant.

Mortality

Hunters reported taking 125 black bears during 1982 (Table 1). Historically, it appears 2 bears were killed in Unit 15 for every 1 killed in Unit 7; this was again true in 1982. Spring and fall hunting periods accounted for 62% and 38% of the total harvest, respectively.

Sex composition of bears killed in 1982 was 66% males, 29% females, and 5% unclassified. No cementum ages were available for the 1982 harvest. Data on mean skull size were collected, however, and can be used as an age indicator. Mean skull size for males taken in Unit 7 was 16.3 inches ($\underline{N}$ = 23) and in Unit 15 was 16.6 inches ($\underline{N}$ = 50). These skull sizes were similar to the previous 9-year average. Mean skull size for females taken in Unit 7 was 15.2 inches ($\underline{N}$ = 8) and in Unit 15 was 15.9 inches ($\underline{N}$ = 24). These skull sizes were also similar to the previous 9-year average.

Baiting of black bears by permit became a legal hunting method on the Kenai Peninsula in 1982. Permits for baiting are issued at the discretion of the Department of Fish and Game. In 1982, 3 baiting stations were authorized in Unit 7 and another 10 were authorized in Unit 15. Hunter success at authorized stations is not currently known.

Management Summary and Recommendations

Black bears are a popular big game animal on the Kenai Peninsula. They are widely distributed, abundant, and provide valuable hunting opportunities. Spring and early summer hunting opportunities are especially popular, since hunting seasons for most other game animals are closed at that time of year.

Characteristics of the harvest are within the normal range of fluctuations, i.e., magnitude of harvest, percentage of males and females in the harvest, and mean skull sizes.

No changes in the season or bag limit were recommended.

Literature Cited

Schwartz, C. C., A. W. Franzmann, and D. C. Johnson. 1981. Black bear predation on moose. Alaska Dep. Fish and Game. Fed. Aid in Wild. Rest. Prog. Rep. Proj. W-17-11 and W-21-1, Job 17.3R. Juneau. 16pp.

PREPARED BY:

David A. Holdermann
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SUBMITTED BY:

Leland P. Glenn
Survey-Inventory Coordinator

Table 1. Units 7 and 15 black bear harvest by season and sex, 1982.

Game Management Unit	Spring			Fall			All			Totals
	M	F	NS[a]	M	F	NS[a]	M	F	NS[a]	
7	24	8	2	5	3	1	29	11	3	43
15	33	10	1	21	15	2	54	25	3	82
Totals	57	18	3	26	18	3	83	36	6	125

[a] NS = Sex not specified.

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 9

GEOGRAPHICAL DESCRIPTION: Alaska Peninsula

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

No data were available.

Population Composition

No data were available.

Mortality

Five black bears were reported taken in Unit 9 during 1982; all were males. Three of the bears were killed incidentally to hunting for other species, and the meat was salvaged from 3 bears. One bear was taken in late May, 1 in late July, and 3 in late August.

Since 1975, the reported black bear harvest has ranged from 4 to 11 bears, and averaged 7 bears annually. Males have composed 69% of the kill since 1975.

Local residents opportunistically kill black bears for meat and hides. The estimated total mortality from hunting is 10-20 black bears a year.

Management Summary and Recommendations

The reported black bear harvest during 1982 was slightly below the previous 7-year mean. However, there is no sealing requirement for black bears in Unit 9, and the reported kill was believed to be below the actual harvest. Because harvest data are often the only information available on black bears, it is recommended a sealing requirement be implemented for Unit 9.

No changes in season or bag limit were recommended.

PREPARED BY:

Mark E. McNay
Game Biologist II

SUBMITTED BY:

Leland P. Glenn
Survey-Inventory Coordinator

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 11

GEOGRAPHICAL DESCRIPTION: Wrangell Mountains

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Standardized surveys of black bears in Unit 11 have not been developed. Observations by Department staff and reports by the public indicated that black bears are abundant.

Population Composition

No data were available.

Mortality

No black bears were reported killed in Unit 11 during 1982. This compares to a mean annual harvest of 8 black bears (range 6 to 9) taken during 1979-1981. In considering the absence of any harvest this year, it should be kept in mind that black bears may be taken for meat, without the hide and skull being salvaged. In these cases, there would be no sealing requirement and thus no record of use.

Management Summary and Recommendations

The hunting effort for black bears in Unit 11 is low and has no appreciable effect on the bear population.

No changes in season and bag limit were recommended.

PREPARED BY:

James W. Lieb
Game Biologist II

SUBMITTED BY:

Leland P. Glenn
Survey-Inventory Coordinator

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 12

GEOGRAPHICAL DESCRIPTION: Upper Tanana and White Rivers

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

No standardized surveys of black bears have been conducted. Observations of bears during spring 1982 and recent harvest levels indicate that black bears exist at moderate to high densities in suitable forested habitat throughout Unit 12. Population trend is unknown.

Mortality

The total reported harvest of black bears during 1982 was 33, compared to 18 in 1981 and 24 in 1980. The spring harvest was 22 bears and the fall harvest totaled 11. The 1982 spring harvest showed a substantial increase from 1981 when only 3 bears were taken in the spring, while the fall harvests for the 2 years were similar.

Of the 33 bears killed, sex was not recorded for 4. Of the remaining 29, 55% (16) were males. The mean skull sizes of males and females were 16.2 inches and 15.3 inches, respectively. Mean skull sizes showed little difference from those measured in 1981.

The average age of the 24 bears whose ages were determined (including 2 bears of unknown sex) was 5.8 years. The mean age of males was 5.9 years, females 5.8 years. Subadult black bears <4 years of age (N = 10) composed 42% of the bears harvested and aged. Only 1 yearling was taken, possibly because black bear females in the Interior may not be weaning offspring until after the young reach 2 years of age, and many hunters are probably reluctant to shoot young black bears accompanied by females.

Fifty-nine percent of the bears were taken in the Tanana River drainage, 28% in the Tok, 6% in the Tetlin, and 3% in the Robertson.

Management Summary and Recommendations

Black bears in Unit 12 exist at moderate to high densities in suitable forested habitat. Hunting pressure is low in relation to the probable population size.

Because so little is known about black bears in Interior Alaska, basic research should be conducted to determine density, productivity, and other information necessary for future management. Increasing interest in the black bear as a moose calf predator and as a desirable big game animal will increase the need for basic life history information in the future.

PREPARED BY:

David G. Kelleyhouse
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SUBMITTED BY:

Jerry D. McGowan
Survey-Inventory Coordinator

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 13

GEOGRAPHICAL DESCRIPTION: Nelchina Basin

PERIOD COVERED: 1 January-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Field observations and reports from the public indicated that black bears are abundant in various portions of Unit 13. Miller (1983) made a preliminary estimate of bears, 1 year of age or older, at 5.2 bear/mi^2 along the upper Susitna River. Similar or even higher bear densities might be expected in other riparian forest habitats of Unit 13.

Population Composition

After accumulating 3 years of capture data in the upper Susitna River region, Miller (1983) found that the average age for 28 female black bears $\geq$2 years old was 7.1 years, while 27 males $\geq$2 years old averaged 6.1 years. Females radio-collared prior to 1982 had no new cubs in 1982. Miller (1983) hypothesizes that this might have been a response to an apparent poor 1981 berry crop. He also found that mean home range sizes were larger in 1981 than in 1980 or 1982, possibly a response to the poor 1981 berry crop.

Mortality

Seventy-two black bears were reported killed during 1982. This was a decrease from 1980 and 1981 when 87 and 93 bears were taken respectively, but approximates the 10-year (1973-1982) average of 70 bears.

The sex composition of the harvest, 66% males and 34% females, also approximates the 10-year (1973-1982) average of 68% males and 32% females. Nonresident hunters took 22% (16) of the harvest in 1982. Sixty percent of successful hunters indicated they salvaged the meat, and 38% reported taking a bear incidentally to other hunting.

Little is known about overall mortality rates for black bears in this area of Alaska. The mortality rates for marked bears, $\geq$2 years of age, in a portion of the Unit averaged 11.6%/year (13 deaths from 48 bears over a 2.3-year period) (Miller 1983). Seventy-seven percent of this mortality was from hunting.

Management Summary and Recommendations

The black bear's popularity as a game species has been increasing in recent years. After 3 consecutive years of increased harvests, the number of bears taken in 1982 declined. At the same time, skull size and proportion of males in the harvest showed little change.

No changes in season and bag limit were recommended.

Literature Cited

Miller, S. D. 1983. Big game studies. Vol. VI. Black bear and brown bear. 1st. Annu. Phase II Rep. Susitna Hydroelectric Proj. Alaska Dep. Fish and Game. Juneau. 99pp.

PREPARED BY:

James W. Lieb
Game Biologist II

SUBMITTED BY:

Leland P. Glenn
Survey-Inventory Coordinator

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 14

GEOGRAPHICAL DESCRIPTION: Upper Cook Inlet

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Frequent bear observations and complaints by residents of nuisance bears indicated an abundant population.

Population Composition

No data were available.

Mortality

There were 63 bears killed during 1982 (32 in Subunit 14A, 13 in Subunit 14B, and 18 in Subunit 14C). Only 1 black bear was reported taken in defense of life or property.

During the spring 1982 season in Unit 14, hunters reported harvesting 26 males, 4 females, and 3 of unknown sex; the fall season breakdown was as follows: 19 males, 8 females, and 3 of unknown sex. Mean skull size during the spring season was 16.8 inches for males ($\underline{N}$ = 25) and 16.0 inches for females ($\underline{N}$ = 4). Seventeen male bears taken during the fall 1982 season had a mean skull size of 17.1 inches; 15.0 inches was the mean skull size for females ($\underline{N}$ = 8).

Management Summary and Recommendations

Since black bears are generally associated with dense cover, it is believed hunters have little opportunity to select for specific age or size bears. No age data for the harvested black bears were available; however, the mean skull size of males increased over that of the previous year and is believed to be an indication that hunting was having little impact on the bear population. Characteristics of the harvest are within the normal

range of annual fluctuations, i.e., magnitude of kill, percentage of males in the harvest, and mean skull sizes.

No changes in seasons or bag limits were recommended.

PREPARED BY:

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Nicholas C. Steen
Game Biologist II

SUBMITTED BY:

Leland P. Glenn
Survey-Inventory Coordinator

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 16

GEOGRAPHICAL DESCRIPTION: West Side of Cook Inlet

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Frequent field observations and reports of nuisance bears indicated an abundant population of black bears in Unit 16.

Population Composition

No data were available.

Mortality

There were 74 black bears, (39 males, 30 females, and 5 sex unknown) killed during the 1982 season. This was a substantial decline from the 1980 harvest of 248 (70%) and the 1981 harvest of 142 (48%). Two additional bears were reported as nonsport kills.

During the spring 1982 season in Subunit 16A, 5 males, 1 female, and 1 black bear of unknown sex were harvested. During the same season, 7 males, 4 females, and 1 of unknown sex were reported harvested in 16B. In addition, 5 males and 4 females were taken in unspecified areas of Unit 16.

In fall, 4 males, 5 females, and 1 of unknown sex were reported taken by hunters in Subunit 16A; 16B's harvest was as follows: 14 males, 13 females, and 2 of unknown sex. In unspecified locations of GMU 16, 4 males and 3 females were reported taken during fall 1982.

Mean skull size of bears reported taken in Unit 16 during spring 1982 was as follows: males, 16.6 inches (N = 15) and females, 15.0 inches (N = 7). Of those black bears taken during the fall season, the mean skull size for males was 16.4 inches (N = 21) and 15.7 inches for females (N = 20).

Management Summary and Recommendations

The harvest of 74 black bears was the 2nd lowest level of reported kill (66 bears sealed in 1974) since mandatory black bear sealing regulations were adopted. The mean harvest level for the previous 9 years was 129 bears with the largest harvest, 248, occurring in 1980. In general, harvest levels for the Unit reflect the impact of weather conditions on hunter effort and/or bear vulnerability. In 1982, cold temperatures during spring delayed the emergence of many bears from their dens. In addition, inclement weather during September, when many black bears are taken incidentally to moose hunts, decreased the number of hunters afield and therefore decreased harvest levels for both species. Mean skull size of male and female bears were comparable with data from previous years and indicated that hunting has not had a significant impact on the bear population.

No changes in seasons or bag limits were recommended.

PREPARED BY:

James B. Faro
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SUBMITTED BY:

Leland P. Glenn
Survey-Inventory Coordinator

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 17

GEOGRAPHICAL DESCRIPTION: Northern Bristol Bay

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

No data were available.

Population Composition

No data were available.

Mortality

Sealing of black bears is not required in Unit 17, and none were reported taken.

Management Summary and Recommendations

Data necessary for management of the Unit 17 black bear population were nonexistent. The State game regulation which requires sealing of bear skins and skulls in other Units should be amended to include black bears in Unit 17.

PREPARED BY:

Kenton P. Taylor
Game Biologist III

SUBMITTED BY:

Leland P. Glenn
Survey-Inventory Coordinator

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 20

GEOGRAPHICAL DESCRIPTION: Central Tanana-Upper Yukon Valley

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

The black bear population in Unit 20 is probably stable; however, black bear population dynamics are poorly understood in Interior Alaska. Standardized surveys to determine black bear population status, trend, and sex and age composition are not conducted in Game Management Unit 20. Harvest data, including sex and age composition, are collected through the black bear sealing program; it is not known if these data reflect changes in the bear population.

Mortality

According to sealing document information, 145 black bears were harvested in Unit 20 during 1982, not including 6 nonsport kills. The 1982 harvest compares to 217 during 1981, 134 in 1980, 93 in 1979, 146 in 1978, 201 in 1977, 158 in 1976, 112 in 1975, and 97 in 1974. Some management Unit boundaries were changed midway through 1981; therefore, after that date, harvest data are not totally comparable to past years. Bear harvests fluctuate considerably, but the reasons for the variations are not understood. Residents account for 94% of the harvest. Both the mean skull size of male bears harvested during 1982 and the 12-year mean for Unit 20 were 17.0 inches. Other harvest data are presented in Table 1.

Management Summary and Recommendations

The black bear population in Unit 20 is probably stable; however, black bear population dynamics are poorly understood in Interior Alaska. Little data are available on basic biology, movements, population status, or the effects of varying degrees of harvest levels on bear populations. With the continuing high interest in black bear hunting and increasing hunting pressure experienced in the Interior, knowledge of black bear biology must be improved so that the species can be managed on a scientific basis rather than by intuition and guesswork.

Although hunting may have affected black bear abundance locally, on a regional basis populations appear to fluctuate independently of hunting.

PREPARED BY:

Larry B. Jennings
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SUBMITTED BY:

Jerry D. McGowan
Survey-Inventory Coordinator

Table 1. Black bear harvest by Subunit, 1982.

	Harvest						
Subunit	Spring	Fall	Male	Female	Unk.	Total	Mean age (yr)
20A	7	19	16	7	3	26	4.7
20B	30	44	56	18	0	74	5.0
20C	5	17	13	8	1	22	6.6
20D	13	6	14	5	0	19	4.8
20E	0	4	4	0	0	4	6.3
20F	3	3	4	1	1	6	4.3
Totals	58	93	107	39	5	151	

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1

GEOGRAPHICAL DESCRIPTION: Southeast Mainland

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

No data were collected. However, populations appear stable.

Population Composition

No data were collected.

Mortality

Based on brown bear sealing documents, the 1982 harvest in Unit 1 was 17 bears (10 males and 7 females). One nonsport kill, a male, was reported in Subunit 1B near Wrangell. Resident hunters accounted for 11 bears and nonresidents (all of whom were guided) took 6.

Nine bears (8 males and 1 female) were taken during the spring season, all in May; 8 bears (2 males and 6 females) were taken during the fall season: September, 5 bears; October, 2 bears; and November, 1 bear.

The mean skull size of males in 1982 was 21.5 inches ($\underline{N}$ = 9), and the mean cementum age was 7.3 years ($\underline{N}$ = 9). The 22-year average of male skull size and cementum age was 22.1 inches and 7.1 years, respectively.

Management Summary and Recommendations

Harvest levels have remained relatively stable over the past several years. The 17 bear harvest in 1982 was slightly above the 22-year average annual harvest of 15.4 bears. No significant changes in harvest trends were noted for any of the 4 Subunits in Unit 1.

An increase in hunting pressure and harvest is anticipated in Unit 1 as human populations increase. Where remote facilities are being developed for logging, mining, and construction projects that require on-site living quarters for workers, hunting pressure and bear/human conflicts will increase. Bear harvest levels in these areas should be closely monitored to assure proper maintenance of population levels.

No changes in season or bag limit were recommended.

PREPARED BY:

David W. Zimmerman
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SUBMITTED BY:

Donald E. McKnight
Regional Supervisor

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 4

GEOGRAPHICAL DESCRIPTION: Admiralty, Baranof, Chichagof, and Adjacent Islands

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

No data were available.

Population Composition

No data were available.

Mortality

The sport harvest in 1982 was 51 bears. Characteristics of the harvest were well within the standards for Unit 4 except there was a substantial drop in the mean ages of both males and females (Table 1).

Three bears were known to have been taken in defense of life or property.

Management Summary and Recommendation

From a total number perspective, it would appear the Unit 4 brown bear population is adequate to support the sport hunting effort existing today. The suspected trend of a disproportionate kill by nonresident hunters and an increasingly high proportion of females in the harvest, as was reported in 1981, was not observed in 1982.

The 1982 sport harvest of 51 bears falls within the goal established by the Alaska Board of Game and is consistent with Division of Game's long-term management plan which has been endorsed by the Board. The nonsport kill continues to be excessive, but no means are known to reduce that kill. The age of bears in the harvest will have to be monitored closely in the next few years.

Until this year, all data presented in Table 1 were developed by a hand compilation of sealing certificates on file in the Sitka office. All data presented in Table 1 of this report were generated by the Anchorage Statistics Section. Changes in most harvest parameters are slight, but the age data do vary considerably. Ages presented in earlier reports were from annuli counts, while those provided by the Statistics Section were rounded off to the past full year's age. Consequently, ages presented in all previous Unit 4 survey-inventory reports are more technically correct, but this new reporting procedure makes Unit 4 data conform to those generated by the Statistical Section and all other Statewide S&I reports.

No changes were recommended in seasons or bag limits.

PREPARED BY:

Loyal J. Johnson
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SUBMITTED BY:

Donald E. McKnight
Regional Supervisor

Table 1. Game Management Unit 4 brown bear harvest, 1961-1982.

Year	Total kill	% kill in spring	% nonres. kill	% males	Mean skull size male[a] (N)	Mean age (yr) Male (N)	Female (N)
1961	39	72	62	79	24.7 (12)	ND	ND
1962	44	73	66	67	23.9 (8)	ND	ND
1963	26	69	58	73	22.4 (9)	ND	ND
1964	55	73	44	69	23.7 (13)	ND	ND
1965	68	63	52	66	23.5 (11)	ND	ND
1966	76	65	67	68	22.4 (24)	ND	ND
1967	69	61	48	68	23.0 (20)	ND	ND
1968	50	74	32	78	22.2 (30)	5.7 (9)	ND
1969	65	66	55	75	22.7 (46)	6.5 (32)	ND
1970	72	79	51	72	22.0 (50)	6.7 (44)	ND
1971	79	78	52	71	22.5 (47)	7.5 (47)	8.0 (19)
1972	77	66	53	75	22.5 (56)	8.4 (54)	6.0 (17)
1973	99	72	40	68	21.6 (64)	7.2 (65)	7.9 (31)
1974	86	73	50	75	22.1 (54)	7.1 (58)	7.3 (21)
1975	105	72	57	70	22.3 (69)	7.5 (68)	6.0 (28)
1976	142	79	61	65	22.4 (90)	9.1 (89)	8.2 (49)
1977	67	84	55	71	21.6 (43)	6.8 (44)	8.0 (17)
1978	67	73	54	75	21.6 (49)	7.2 (47)	7.3 (16)
1979	51	69	71	68	21.1 (31)	6.3 (29)	6.0 (13)
1980	65	60	55	67	22.1 (39)	7.2 (42)	7.9 (27)
1981	62	65	61	68	21.3 (40)	6.3 (42)	7.8 (20)
1982	51	55	49	71	21.5 (33)	6.1 (34)	5.3 (15)
Totals	1,515						
Means		71	54	70	22.2	7.4	7.3

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 5

GEOGRAPHICAL DESCRIPTION: Yakutat and Malaspina Forelands, Russell Fjord, Gulf of Alaska

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

No data were collected. However, general observations and hunter interviews indicate that the brown bear population in Unit 5 is currently stable with good recruitment.

Population Composition

No stream or aerial surveys were conducted this report period, but interviews with guides, hunters, and Commercial Fisheries personnel indicate that brown bears were fairly abundant and reproduction was good throughout the Unit. Most hunters reported seeing many females accompanied by either cubs-of-the-year or yearlings. Twins were common, and there was a fairly high incidence of triplets. There were also 2 known cases of quadruplets in the immediate Yakutat area.

As usual, the Yakutat city landfill continued to attract a large number of bears. Eleven bears consistently utilized the dump: 1 female with 4 yearlings, 1 female with 3 yearlings, and 2 lone adults.

Mortality

Nonsport mortalities included 1 adult female that washed up on the beach between Ocean Cape and the old Coast Guard Loran A station, and a subadult male that was killed at the landfill.

A necropsy on the female indicated that her death was probably the result of a fight with another bear. I found large subcutaneous hematomas, and what appeared to be bite marks, covering her head and neck. On outward appearance, none of her injuries appeared to be mortal but neither were there any signs of gunshot wounds.

The subadult male was found dead at the dump by a Yakutat resident. A necropsy, and subsequent investigation by Fish and Wildlife Protection, revealed that the bear had been shot in the back of the head with a large-caliber handgun. To date, the case is still unsolved.

The sport harvest for 1982 was 31 bears (18 males and 13 females). This harvest represents a small increase in the annual kill. Although this 3-bear increase is not alarming in itself, the 31-bear harvest represents an 80% increase over the 22-year average of 17 bears per year.

In the spring, hunters killed 18 bears, (12 males and 6 females). The fall harvest was 13 bears (6 males and 7 females).

The mean skull size for 17 males was 22.9 inches, with an average age of 9.1 years. Thirteen females had a mean skull size of 20.5 inches and an average age of 6.8 years.

Management Summary and Recommendations

Currently, the brown/grizzly bear population in Unit 5 appears stable and may be increasing. Management of the Yakutat landfill is improving. Work has begun on the construction of an electrified chain link fence, which should be completed by early summer 1983. Although this structure is not expected to completely solve the bear problems within the city of Yakutat, it should reduce the number of bears that remain in the local area to feed at the dump. This should ultimately reduce bear management problems.

During early summer 1983, an electrified fence was constructed around the offal disposal site used by the fish processing plant in Dry Bay on the Alsek River. Due to its design, this fence was only moderately successful in keeping bears out of the offal pile. The fence is being redesigned and is scheduled for reconstruction in late spring 1983. Progress should be monitored closely to assure that the new structure is suitable.

The sport kill of brown bears during this report period was the highest in 22 years of record keeping. This may represent an increase in hunting pressure or an increase in hunter success, but both aspects should be closely monitored in the future.

No changes in season length or bag limit were recommended.

PREPARED BY:

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SUBMITTED BY:

Donald E. McKnight
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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 6

GEOGRAPHICAL DESCRIPTION: Prince William Sound and North Gulf Coast

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Sufficient data to determine current status or trend of brown bears in Unit 6 were not available.

Mortality

The Unit 6 brown bear sport harvest was 26 bears: 17 males, 8 females, and 1 of unknown sex. No nonsport kills were reported during 1982.

Nineteen bears were killed during the spring season and 7 during the fall season. Males taken in 1982 averaged 7.1 years of age and females averaged 8.7 years of age. Nonresidents took 46% of the bears, with most of the nonresident bear harvest occurring during the spring season.

Distribution of the brown bear harvest in Unit 6 was as follows: Montague Island (1), Hinchinbrook Island (4), Valdez to Cordova area (5), west Copper River Delta (4), and the area east of Copper River (12).

Management Summary and Recommendations

The 1982 reported harvest of 26 bears was slightly below the 22-year average of 30 bears, but was 9 bears above the 1981 harvest. The spring harvest of 19 bears was average, whereas the fall harvest of 7 bears was significantly below the 12-bear average.

Examination of the harvest data indicates average-to-above-average figures on percentage of males taken, age, and harvest by nonresidents. The distribution of harvest was also normal, except for Montague Island which was below average.

The bear hunting season in Subunit 6B, Martin River valley, opened 1 September, which was earlier than the remainder of Unit 6. The early fall season had little if any effect; 3 bears were taken during this time period (1 Sep-10 Oct). The quality of fall hides appeared better than some bears killed during the spring season.

The brown bear resource in Unit 6 has received moderate-to-light hunting pressure in recent years. It is recommended that the entire Unit 6 fall season open on 1 September.

PREPARED BY:

Julius L. Reynolds
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SUBMITTED BY:

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 7 and 15

GEOGRAPHICAL DESCRIPTION: Kenai Peninsula

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Estimates of brown bear densities in Units 7 and 15 are currently not available. However, based on historical harvest data and on incidental bear observations made by Department personnel, it is believed that bear populations have remained relatively stable over the past 2 decades.

Population Composition

Data were not available.

Mortality

Eight bears were reported killed during the 1982 season. Mean age of males and females was 5.1 years ($\underline{N}$ = 5) and 4.6 years ($\underline{N}$ = 2), respectively. Resident hunters accounted for the entire 1982 sport harvest.

An additional 7 bears were killed in 1982 in defense of life and property. This kill included 2 adult males, 4 adult females, and 2 bears 2.5 years of age. Four of these cases occurred in wilderness settings, while a 5th case took place in close proximity to permanent human dwellings.

Examination of past records revealed that 33 brown bears have been killed in defense of life and property since 1970. It is particularly noteworthy that 10 of these bears have been killed since 1980.

Management Summary and Recommendations

Brown bears are relatively abundant in parts of Units 7 and 15. The 19-year mean annual harvest, prior to the introduction of spring season over the entire peninsula, was 6 bears. Since 1980, the mean annual harvest has been 14 bears; the maximum annual harvest for this period was 15 bears. On the average, 1 brown bear has been killed in defense of life and property for every 4 bears taken in during the hunting season in the past 5 years.

The rising number of brown bears killed in defense of life and property in recent years is a potential management problem. Past records of defense of life and property cases are currently being examined with respect to the following: season of kill; kill location; sex, age, and reproductive status of bear(s) that were involved; and bear group size to determine whether analysis of these factors will provide for better management of people and brown bears on the Kenai Peninsula. Informational and educational materials dealing with brown bear ecology, behavior, and management should be prepared and made available to the public.

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David A. Holdermann
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SUBMITTED BY:

Leland P. Glenn
Survey-Inventory Coordinator

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 8

GEOGRAPHICAL DESCRIPTION: Kodiak Island and Adjacent Islands

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

The sex and age composition of the brown bears killed in Unit 8 has shown little change in several years. High selectivity for males has continued.

Population Composition

Aerial composition surveys were conducted in selected alpine habitats and along selected salmon spawning streams by the U.S. Fish and Wildlife Service in July and August 1982. During replicate stream surveys, 894 bears were observed. Four-hundred and thirty bears were single bears (48%), 150 were maternal females (17%), 207 were yearlings (23%), and 107 were cubs-of-the-year (12%). This was the highest total count recorded in several years. Good survey weather and possibly heavier use of salmon by bears because of a widespread berry crop failure may explain the higher counts according to U.S. Fish and Wildlife personnel. During surveys of selected alpine habitats in the Uganik Bay and Uyak Bay drainages, 285 bears were observed, including 94 single bears (33%), 60 maternal females (21%), 35 yearling bears (12%), and 96 cubs-of-the-year (34%). The percentages of cubs and yearlings in 1982 equaled or exceeded the mean percentages recorded for the 1978-82 period for both alpine and stream surveys.

Mortality

Hunters killed 149 bears (97 males, 66%; 51 females, 34%; and 1 bear of unknown sex). Eighty-six bears were killed during the spring season; 71% were males ($\bar{N}$ = 61) and 29% were females ($\bar{N}$ = 25). Sixty-three bears were killed during the fall season: 36 males (58%), 26 females (42%), and 1 bear of unknown sex. The distribution of the brown bear kill by management subunit was as follows: Afognak, Raspberry, and Shuyak Island (20); NE Kodiak Island (18); SE Kodiak Island (21); SW Kodiak Island (58); and NW Kodiak Island (32).

A total of 442 permittees reported hunting with a hunter success of 33%. Of these permittees, 218 hunted in drawing hunts and 224 hunted in the registration hunt.

Sixteen additional bear mortalities were reported. These mortalities included 12 bears killed in defense of life or property, 3 capture mortalities, and 1 bear dead of unknown causes. Sex composition of these mortalities was 6 males, 9 females, and 1 bear of unknown sex.

Seven incidents of bears being wounded during bear hunts were tallied from permit reports. Two additional reports of bears wounded in defense of life or property were also received.

Total recorded mortality from all sources was 165 bears. The recommended annual sport harvest was exceeded by 4 bears. The recommended harvest levels were equaled or slightly exceeded in all but 1 management subunit (4).

Mean age of 94 males was 6.4 years; mean age of 50 females was 7.8 years. Fifty-four males (57%), and 24 females (48%) were adult bears $\geq$5 year of age.

Management Summary and Recommendations

Much of the fall harvest was from subunit 1 Afognak, Raspberry, and Shuyak Islands. Eighteen bears were killed in this area in fall, compared to the previous 21-year mean of 4 bears. This was the highest fall area harvest in 21 years and the highest annual kill there since 1967 when 23 bears were killed. Most of these bears were killed incidentally to deer and elk hunting. Deer and elk hunting pressure has rapidly increased in subunit 1, and many of these hunters also obtained bear permits. Registration permits issued during the fall season (337) more than doubled the 144 such permits issued in fall 1980. If the 1983 fall harvest follows a similar use pattern or if the guideline harvest level of 20 bears for this 3-island area is exceeded in 1983, a drawing permit hunt should be implemented.

Confrontations between hunters and brown bears resulted in 5 bears killed in defense of life or property in Unit 8. In 3 cases, bears were killed by deer hunters who confronted bears while returning to pack out deer carcasses or at meat caches. The Unit 8 deer harvest in 1982 was estimated at 6,000 or more. Bears have become increasingly accustomed to feeding on deer offal. Numerous incidents of bears raiding kill sites and camps were reported by hunters in 1982. Increased effort should be directed at educating deer hunters about how to properly handle and store deer meat to avoid confrontations with brown bears.

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SUBMITTED BY:

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 9

GEOGRAPHICAL DESCRIPTION: Alaska Peninsula

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

No data were collected on actual population size or density, but recent bear trend surveys flown along salmon streams can be compared with past surveys to provide insight into the status of the bear population on the Alaskan Peninsula. The Black Lake study area was surveyed during a consecutive 6-year period from 1962 to 1969. The best single survey from each of those 6 years ranged from 67 to 123 and averaged 103 bears, with an average of 38 bears counted per hour. On 8 August 1982, surveys were again flown in this area using the same procedure (Table 1). Counts for the morning and evening surveys were 134 and 148 bears, respectively; both exceeded the previous record count. During the evening survey, 51 bears were counted per hour.

The U.S. Fish and Wildlife Service conducted bear composition surveys near Cold Bay in 1968 and annually since 1976. The number of bears counted in 1981 and 1982 surveys were substantially higher than previous comparable surveys. The U.S. Fish and Wildlife Service flew bear surveys along tributaries of Becharof Lake in 1975 and annually since 1980, and around Ugashik Lakes starting in 1981. In both those areas, the highest single counts in 1982 were above the best surveys from past years. Although these bear surveys were not designed to measure population densities, the increase in bears counted in 1982 over past years suggests a growing population.

Population Composition

Both harvest statistics and bear trend surveys along salmon streams indicate a shift in bear sex and age composition since the 1960's. Of 4,071 bears classified from 1962-1969, 24% were females with young, 51% were offspring, and 24% were single bears. Surveys conducted since 1980 by the FWS and the 1982 Black Lake survey by the Department classified 2,487 bears as follows: 17% females with young, 35% offspring, and 48% single bears.

The Black Lake and Izembek study areas provide the best long-term, comparable data for analysis of bear trends. At Black Lake during the 1960's, the number of single bears averaged 23 and the number of adult females and accompanying young averaged 81. Results from the 1982 surveys in the same area showed no drastic differences in the number of females with their young (85), but there were more than twice as many single bears (57). Similarly, at Izembek where comparable annual surveys were begun by the FWS in 1976, there has been no significant change in the absolute number of adult females and young, but the number of single bears counted in 1982 was twice the average recorded during the 1970's.

Mortality

Hunters killed 210 bears in 1982; all but 5 were taken during the spring season. The spring harvest was 65% males, which was down from the long-term spring average of 72% males. Table 2 presents historical harvest data showing the number and mean age of male and female bears killed each season since 1970.

Unit 9 north of the Naknek drainage has traditionally been lightly hunted due to limited access. Since 1976, the total annual harvest has averaged 27 bears; during 1982, the harvest was 26 bears.

The remainder of Unit 9 south of the Naknek River is divided into 3 management subunits, 9-02, 9-03, and 9-04 from north to south. The harvest guidelines for these designated areas have been 150 bears/calendar year. However, the kill has exceeded this guideline by an average of 15% over the past 3 years. In 1982, 178 bears were reported taken from these 3 areas.

The registration permit hunt in the Naknek drainage was designed to minimize bear/human conflicts in the most heavily settled portion of Unit 9. In 1982, 2 males and 2 females were taken during the fall hunt, 1 of which is being investigated because the hunter did not have a permit. Additional publicity should be circulated about the conditions of this permit hunt during those seasons when Subunits 9B, 9E, and the rest of 9C are closed. This hunt has been conducted for the past 7 years with satisfactory results. Hunters take an average of 5 bears/year, and nonsport kill averages about 2 bears/year.

The registration permit hunt in the Cold Bay area serves a similar management objective in that community. Unlike the Naknek hunt, however, the number of permits and harvest are rigidly controlled. A maximum of 10 permits are valid at any given time, and emergency closures may be used to prevent the yearly harvest from exceeding 4 bears. During the 1982 spring hunt, 2 females were taken by 26 May when the season was closed. One female was taken during the fall hunt.

In addition to the take by hunters, 4 bears were reported taken in defense of life and property in Unit 9. The number of unreported defense kills was estimated at 10-15 and subsistence take

was estimated at 10-15 bears. Thus, the total human kill of bears was approximately 240 for 1982.

Management Summary and Recommendations

Analysis of recent trend count information suggests that the number of adult females and young produced has changed little, but survival of single subadult bears probably has increased during the 1970's, resulting in a higher bear density.

Harvest statistics for the past 4 spring seasons in management subunits 9-03 and 9-04 (Table 3) show relatively stable conditions, as measured by percent males in the harvest, mean ages and percent of adults in the harvest. This is reassuring since the results of the fall 1981 season suggested that subunit 9-03 might be sustaining heavy hunting pressure. If, in fact, the bear population has increased, and now has a higher proportion of subadult bears, as indicated by the Black Lake surveys, it would be expected that the mean age would drop. This change would be most evident if hunters became less selective for large adult male bears. Indications are that guides and many resident hunters do not have the opportunity to be as selective as they could when seasons were longer, fewer clients were booked, and same-day-airborne hunting was legal.

The interpretation of harvest data is extremely complicated without some reliable data on the actual size of the bear population and its sex and age structure. Lacking an efficient method of determining actual bear densities, management will necessarily have to be based on kill data and continued stream surveys where only large changes in the population size and composition can be detected, and eventually with more sophisticated modeling of harvest data.

No changes in seasons or bag limits were recommended.

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SUBMITTED BY:

Leland P. Glenn
Survey-Inventory Coordinator

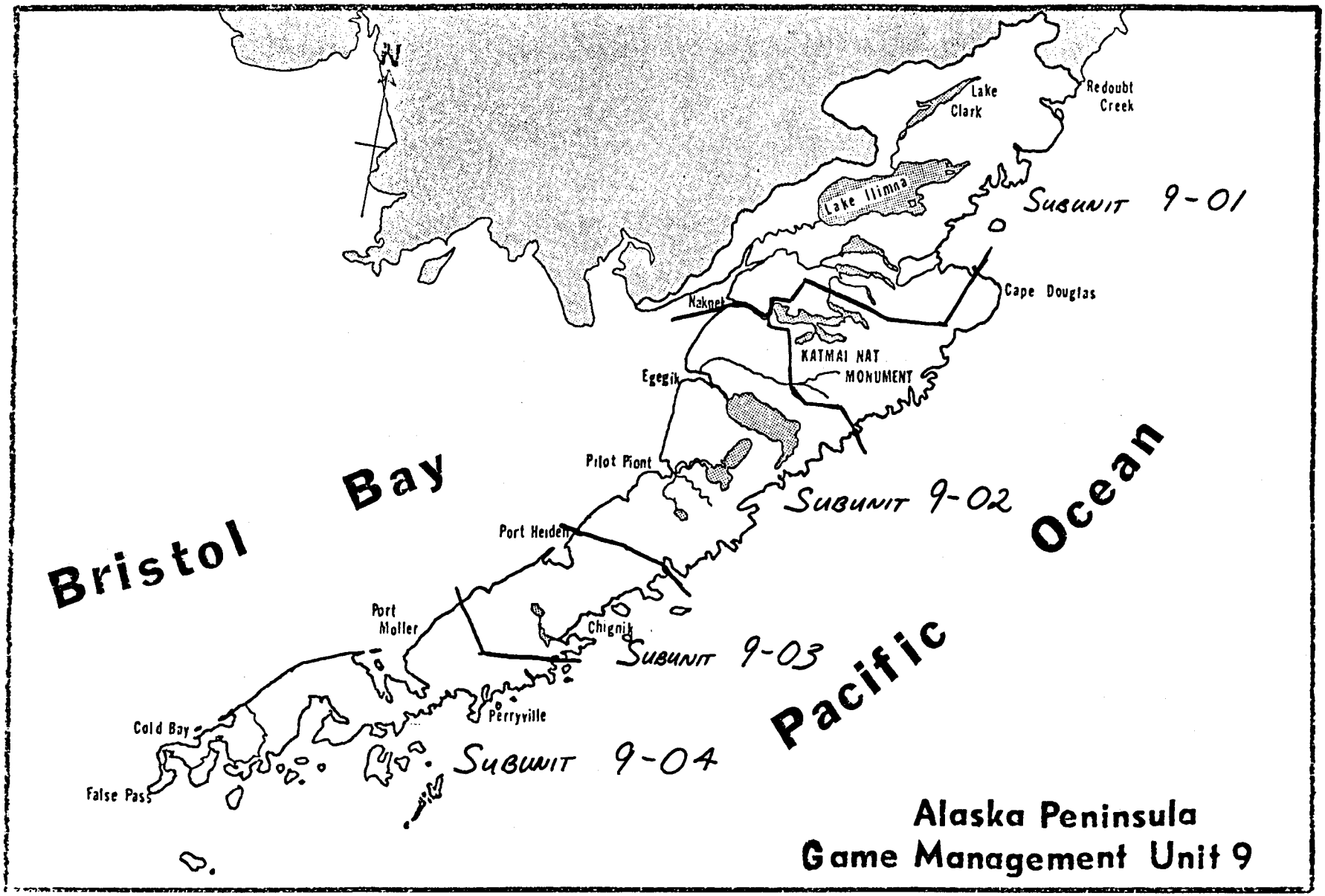

Fig. 1. Map of brown bear subunits within GMU 9.

Table 1. Black Lake bear trend counts, 8 August 1982.

Time	Females with young																Single bears				Total bears
	Cubs				Small				Medium				Large								
	F/1	F/2	F/3	F/4	F/1	F/2	F/3	F/4	F/1	F/2	F/3	F/4	F/1	F/2	F/3	F/4	Sm.	Med.	Lg.	Unid.	
Morning count	5	7	2	0	0	2	1	0	1	4	2	0	1	1	0	0	28	23	6	1	134
Evening count	3	7	4	2	0	1	0	0	0	2	4	0	0	1	3	0	21	26	8	0	148

Table 2. Alaskan Peninsula brown bear sport harvest showing the number of bears killed by year, season, mean age, and percentage of males in the harvest, 1970-1982.

	Sex				Fall harvest				Spring harvest				
					Mean age (yr)		% ≥5 yr			Mean age (yr)		% ≥5 yr	
Year	M	F	Unid.	Total	M	F	F	M	%M	M	F	F	M
1970	103	50	5	158	5.6	7.2	45	36	78	8.2	6.6	1	79
1971	122	63	10	195	5.7	5.5	35	28	83	8.6	4.8	53[a]	85
1972	154	119	6	279	6.2	7.8	57	37	69	8.4	9.3	1	66
1973	138	98	6	242	5.6	7.3	50	33	70	6.4	5.7	41	66
1974	75	66	0	141	5.5	7.5	46	32	--	--	--	--	--
1975	120	96	8	224	5.6	7.0	47	30	64	6.9	7.2	57	60
1976	108	41	5	154	--	--	--	--	72	7.6	6.6	54	65
1977	108	77	4	189	4.5	7.0	46	25	--	--	--	--	--
1978	133	47	3	183	--	--	--	--	74	7.0	6.7	62	58
1979	109	55	3	167	5.1	6.0	38	27	--	--	--	--	--
1980	139	62	2	203	--	--	--	--	69	7.1	7.0	61	49
1981	105	84	2	191	5.7	5.6	32	31	--	--	--	--	--
1982	133	75	2	210	--	--	--	--	65	6.6	7.6	64	61

[a] 1970-1972 averaged because of small sample sizes.

Table 3. Spring brown bear harvest of Alaska Peninsula brown bear showing the number killed by management subunit and year, corresponding mean ages, percentage of males in the harvest, and percentage taken by nonresident hunters, 1976-1982.

Year/ subunit[a]	Total kill	% nonres. kill	% males	Mean age (yr) Male	(N)	Female	(N)	% ≥5 years of age Male	Female
Subunit 9-02									
1976	40	58	82	7.7	(31)	5.5	(7)	65	57
1978	61	62	75	7.6	(44)	7.3	(15)	61	73
1980	64	78	62	7.5	(40)	7.6	(22)	58	62
1982	62	81	58	6.0	(36)	9.3	(26)	47	77
Means	57	70	69	7.2		7.4		58	67
Subunit 9-03									
1976	30	67	77	7.4	(23)	5.7	(7)	70	43
1978	49	82	67	7.0	(36)	8.3	(11)	69	64
1980	36	81	77	7.3	(24)	5.7	(12)	71	50
1982	41	71	71	7.1	(28)	6.7	(12)	82	50
Means	39	75	73	7.2		6.6		73	52
Subunit 9-04									
1976	60	58	71	6.8	(35)	7.6	(15)	57	53
1978	42	67	68	6.1	(28)	4.4	(12)	50	42
1980	75	72	72	6.5	(53)	6.8	(21)	60	33
1982	75	77	70	6.3	(52)	6.8	(22)	56	55
Means	63	68	70	6.4		6.4		56	46

[a] Subunit designations for management purposes only.

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 10

GEOGRAPHICAL DESCRIPTION: Unimak Island

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

On 17 August 1982, staff of the Izembek National Wildlife Refuge conducted an aerial survey of Unimak Island and classified 85 bears, compared to 77 in 1981, 92 in 1980, and 75 in 1979. Of the 1982 sample, 38 (45%) bears were alone, 7 females had a total of 14 cubs-of-the-year, and 9 females had 17 yearlings. Although the sample sizes are small, the population appears stable.

Mortality

Four bears were reported taken by hunters during the fall season, and none were reported taken during spring. The fall harvest consisted of 3 males, averaging just over 4 years of age, and 1, 16-year-old female. No data were available on other causes of mortality.

Management Summary and Recommendations

Brown bear hunting on Unimak Island is limited by State permits and by Federal wilderness regulations limiting aircraft access to beaches and existing runways.

During the spring season, only 2 of 7 permittees reported hunting. They spent 12 days hunting and saw 19 bears. During the fall season, 5 of 8 permittees reported hunting; they spent 15 days in the field and saw 78 bears.

Under the current management system, Unimak Island continues to provide a high-quality wilderness experience with good opportunities for hunters to select the type of bear they desire.

No changes in seasons and bag limits were recommended.

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SUBMITTED BY:

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 11

GEOGRAPHICAL DESCRIPTION: Wrangell Mountains

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Standardized surveys of brown bears in Unit 11 have not been developed. Observations by Department staff and reports by the public indicate that brown bears are abundant.

Population Composition

No data were available.

Mortality

Nine brown bears, 4 males and 5 females, were reported killed. The same number was taken last year and was slightly higher than the previous 3-year average (1979-81) of 7.0 bears. The average age for the 4 male bears was 6.1 years; for the 5 females, 7.2 years. Nonresident hunters took 4 of the 9 bears.

Management Summary and Recommendations

Brown bear harvest remains low in Unit 11, the result of reduced hunting pressure after the creation of the Wrangell-St. Elias National Park Monument/Preserve. Brown bear harvest may increase over the next few years as more hunters utilize the preserve component of this park.

No change in seasons or bag limits were recommended.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 12

GEOGRAPHICAL DESCRIPTION: Upper Tanana and White Rivers

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Although no standard surveys of grizzly bears have been conducted, the population in Unit 12 is believed stable based upon 22 years of harvest statistics which show no decreasing trends in harvest level or sex-age composition of bears killed. The population of grizzly bears is estimated to be approximately 350 based upon density in a similar adjacent area and upon an assumed 5% harvest level.

Mortality

The reported grizzly bear harvest during 1982 was 19 bears, compared to a harvest of 22 in 1981 and the 23-year average harvest of 18 bears/year. Two grizzlies were taken during May, and 17 were taken during September.

Males (10) composed 56% of the known-sex harvest, and females 44%. The mean age of bears taken in 1982 was 5.3 years, compared to the historical average of 7.5 years. Among the 15 bears taken in 1982 for which ages were determined, 73% ($\bar{N}$ = 11) were <5 years old. This compares to 53% in 1981 and 59% in 1980. Mean skull size of males and females was 19.7 and 18.9 inches, respectively.

The harvest was well distributed throughout the mountainous portion of Unit 12. Four bears each were taken in the Tok, Little Tok, and White River drainages while 1 bear each was taken in the Stuver Creek, Snag Creek, Jack Creek, Yerrick Creek, and Tetlin River drainages. Two grizzlies were taken in the upper Chisana River drainage.

Management Summary and Recommendations

Based upon harvest data, incidental observations, and reports from local outdoorsmen, grizzly bears appear to be relatively abundant and well distributed in Unit 12. The bear population appears stable.

Most grizzlies in Unit 12 are taken in September incidental to hunts for other, more abundant species of big game. No changes in season or bag limit are recommended at this time.

The grizzly bear is a high-profile species in this area and may be an important predator of moose calves in the Northway-Tetlin flats calving area. Harvest data alone are an inadequate basis for timely management decisions; therefore, more knowledge of basic grizzly bear population parameters in this area is needed for the management of this species.

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SUBMITTED BY:

Jerry D. McGowan
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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 13

GEOGRAPHICAL DESCRIPTION: Nelchina Basin

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

For 1 portion of Unit 13, brown bear density was estimated to be 1 bear/16 mi^2 (Miller and Ballard 1982). Frequent observations of brown bears by Department staff and the public support the hypothesis of relative abundance throughout much of Unit 13. A large number (>30) of problem bear incidents were reported in 1982.

Population Composition

Susitna research findings for 1982 included an initial postemergence litter size of 2.15 newborn cubs in 13 litters. Sex and age composition of study animals this year did not vary significantly from that presented by Miller and McAllister (1982). Brown bear mean ages were 7.7 years for males >3 years of age and 7.9 years for females >3 years of age.

Mortality

Eighty brown bears (46 males and 34 females) were killed in 1982, essentially the same harvest as for 1980 and 1981. Twenty-three bears were taken during the spring season and 57 during the fall season.

Since the spring season was opened in 1980, the mean harvest (82 bears) represents a 41% increase over the mean harvest (58 bears) from 1970-79, when no spring season occurred.

The mean age of all bears in the harvest was 6.7 years, an increase from 5.2 years in 1981 and 5.4 years in 1980. Similar trends in age increase can be seen in bears taken in both spring and fall. The average age for harvested males increased slightly from 5.0 in 1980 and 4.3 in 1981 to 5.3 in 1982. The harvested females showed a greater increase in age, from 5.8 years in 1980 and 6.7 years in 1981 to 8.7 years in 1982.

Mean skull size was 20.6 inches for males, compared to 19.7 inches in 1981; it was 20.2 inches for females, compared to 19.2 inches in 1981.

The natural mortality of young bears was studied by Susitna researchers during the period 1978-1982 (Miller 1983). Forty-three percent (9 of 21 cubs) of 10 litters were lost between emergence from dens as cubs and emergence the following year as yearlings. This study also found a loss of yearlings in 1982, apparently in response to a 1981 berry crop failure. A secondary effect of this failure may be an increase in production of litters in 1983. This fluctuation in habitat condition appeared to have also influenced home range size, increasing during the year the berry crop failed.

Management Summary and Recommendations

Analysis of 1982 harvest data indicated that there had been little change in harvest levels over the past 3 years. Even though the 1982 season was extended from 77 days to 153 days, total numbers harvested did not change--and all bears were taken during a 27 day-period in the spring (27 Apr-23 May) and a 50-day period in the fall (1 Sep-20 Oct). From 1980 to 1982, bears harvested in spring have averaged 1.6 years older than bears harvested in fall. This is in part a result of spring bear hunters being selective for larger bears. Much of the fall take is by caribou and moose hunters who encounter bears incidentally. Increases in mean age and skull size for both males and females support the contention that the brown bear population is capable of withstanding current levels of harvest. Some concern over a long-term decrease in mean age of males warrants closely monitoring the age structure of future harvests.

Concerns over property damage by bears, plus public awareness of the effect of brown bear predation on moose calf survival, have resulted in increased public demand for more liberal seasons and bag limits in Unit 13. While management guidelines presently prescribe maximum brown bear hunting opportunity in Unit 13, there is widespread feeling that the Department has not responded sufficiently to the need for increased bear harvests. It is hoped continued research will more accurately describe brown bear densities and population dynamics, and explore methods for more precisely managing brown bears in Unit 13.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 14

GEOGRAPHICAL DESCRIPTION: Upper Cook Inlet

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

No data were available.

Population Composition

No data were available.

Mortality

Two brown bears, both males, were killed in Unit 14 during this reporting period. Both bears were killed during the fall season.

Management Summary and Recommendations

The length of the brown bear season was increased from 56 days in 1980 to 77 days in 1981 and 1982; however, the annual harvest declined from 8 to 5 to 2 bears, respectively. There is little interest in brown bear hunting in this Unit. All brown bears were killed during the moose hunting season, and it is believed they were taken incidentally by moose hunters.

Unit 14 has never experienced a large brown bear harvest. Between 1961 and 1971, the average annual harvest was 10; between 1972 and 1982, the annual bear harvest was less than 5.

No change in seasons or bag limits were recommended.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 16

GEOGRAPHICAL DESCRIPTION: West Side of Cook Inlet

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Observations of bears by Department staff and the public indicate an abundant population of brown bears in Unit 16.

Population Composition

No data were available.

Mortality

Twenty-six brown bears were reported killed during the 1982 season. Three bears, 2 males and 1 female, were killed during the spring season; 23 bears, 17 males and 6 females, were killed during fall.

During the spring 1982 season, the mean skull size for males and females was 25 inches ($\bar{N}$ = 1) and 21.6 inches ($\bar{N}$ = 1), respectively. Mean age of male bears killed was 9.4 years ($\bar{N}$ = 2). During the fall brown/grizzly bear season, the mean skull size for males and females was 20.5 ($\bar{N}$ = 15) and 19.5 inches ($\bar{N}$ = 5), respectively. Mean age of male bears harvested was 5.6 years ($\bar{N}$ = 16); 8.5 years was the mean age of 6 female bears taken during fall.

Management Summary and Recommendations

The mean age (6.0 years) of males in the harvest decreased over the previous year (6.4 years). The mean age continues to fluctuate from year to year, and these fluctuations are probably due to the small sample size rather than a trend in population status.

No changes in seasons and bag limits were recommended.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 17

GEOGRAPHICAL DESCRIPTION: Northern Bristol Bay

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

No data were available to evaluate the status or trend of the brown bear population in Unit 17. Incidental observations during salmon spawning and waterfowl surveys have indicated a high density of brown bears in Subunits 17A and 17C. Brown bear density in Subunit 17B where hunting pressure is high was unknown.

Population Composition

No data were available.

Mortality

The total brown bear kill by sport hunters in 1982 was 8 bears, 6 males and 2 females. All were taken during the fall season. Nonresidents took half of the reported sport harvest. All but 1 bear was taken in Subunit 17B, primarily from the Mulchatna and King Salmon River drainages. Sample sizes in the 1982 harvest were too small for age data to be relevant. No nonsport harvest was reported during 1982. Fish and Wildlife Protection officers investigated 5 illegally taken brown bears during 1982.

Management Summary and Recommendations

Alternate-year seasons in Unit 9 substantially affect the level of hunting pressure during the spring season in Unit 17. When Unit 9 has no spring brown bear season, Subunits 17B and 19B receive most of the displaced hunting pressure. Conversely, when the spring season is open in Unit 9, pressure is generally low in 17B and 19B. In 1982, not only was the spring season open in Unit 9, but also spring breakup was extremely late in Unit 17. These 2 factors account for the lack of harvest during the spring season.

Several bears are killed each year in defense of life or property. Most of these kills occur near villages and are not reported. Villagers generally do not buy the required $25 resident brown bear tag before killing a brown bear and are subsequently reluctant to report their kills.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 18

GEOGRAPHICAL DESCRIPTION: Yukon-Kuskokwim Delta

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

No data were available.

Population Composition

No data were available.

Mortality

Fourteen grizzly bears were reported harvested from Game Management Unit 18 in 1982. Harvests for the spring and the fall seasons were identical to those reported in 1980 (Table 1). The 1982 harvest was down from the 1981 record harvest of 24 bears. Guided nonresident hunters took 13 of 14 bears sealed in 1982, or 93% of the total. Two persons guided successful hunters in the Unit during the reporting period.

Harvested male bears ranged in age from 7 to 11 years in the spring and 3 to 4 years in the fall. The 1 female bear taken in spring was 24 years old, and fall bears ranged from 6 to 20 years of age. Mean ages of 1982 male and female bears were 8 and 14.5 years, respectively (Table 1). Mean ages of all grizzly bears sealed in Unit 18 are included for comparison (Table 1).

It should be noted that the 77 bears reported taken from Unit 18 since sealing began in 1961 account for less than 0.5% of the Statewide historic harvest (16,418 bears).

Management Summary and Recommendations

The mean ages of grizzly bears sealed from Unit 18 are plotted in Fig. 1. Only 13 of the bears sealed were taken prior to 1979, and no change in age structure during this time period can be

ascertained. Mean ages of female bears (spring and fall seasons) have shown an increase since 1979. Male spring bears indicate a stable age structure since 1979, while fall males exhibit a slight decline in age since 1977. The small sample size renders interpretation of these apparent trends tentative, but it appears that there is no significant overall change in the population's age structure.

The characteristics of the harvest should continue to be monitored in order to anticipate any deleterious change in the sex/age structure of the population. Continued effort with local residents, nonlocal hunters, and guides to increase compliance with sealing requirements is necessary. The nonsport harvest, as well as any illegal harvest, of grizzly bears should be documented whenever possible.

Habitat availability, home ranges, and densities of grizzly bears should be determined. Bear harvests and population trends from GMU's 17A, 17B, 18, and 19B should be analyzed as a single population to determine the advisability of altering season dates.

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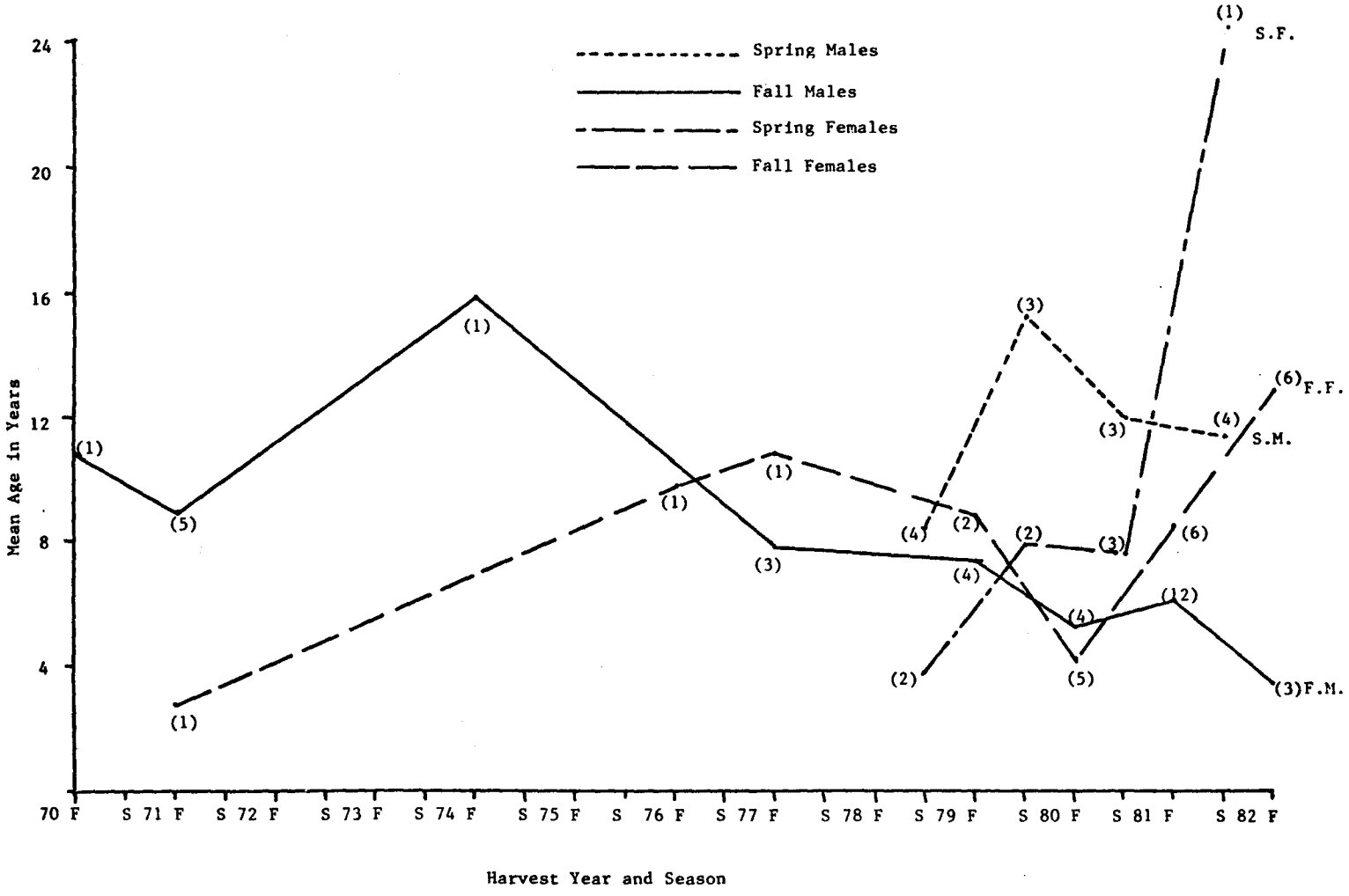

Fig. 1. Mean ages of 77 grizzly bears harvested from GMU 18, 1970 through 1982.

Table 1. Historic Unit 18 grizzly bear harvest from sealing records, 1970-82.[a]

Year	Season dates	Total harvest	Nonres. harvest N	Nonres. harvest %	Males N	Males %	Males Mean age (yr)	Females N	Females %	Females Mean age (yr)
1970F	9/1-11/30	1	--	--	1	100	10.8	--	--	--
1971F	9/1-11/30	6	4	67	5	83	9.0	1	17	2.8
1974F	9/10-10/10	1	--	--	1	100	15.8	--	--	--
1976F	9/10-10/10	1	1	100	--	--	--	1	100	9.8
1977F	9/10-10/10	4	4	100	3	75	7.8	1	25	10.8
1979S	5/10-5/25	6	3	60	4	67	8.4	2	33	3.9
1979F	9/10-10/10	6	5	83	4	67	7.5	2	33	8.8
1980S	5/10-5/25	5	5	100	3	60	15.1	2	40	7.9
1980F	9/10-10/10	9	8	89	4	44	5.3	5	56	4.2
1981S	5/10-5/25	6	5	83	3	50	12.0	3	50	7.7
1981F	9/10-10/10	18	16	89	12	67	6.1	6	33	8.5
1982S	5/10-5/25	5	4	80	4	80	11.4	1	20	24.4
1982F	9/10-10/10	9	9	100	3	33	3.5	6	67	12.8

[a] There was no 1971 spring season, and no reported harvest for 1972, 1973, spring 1974, 1975, spring 1976, spring 1977, and 1978. Fall seasons were changed in 1974, spring seasons in 1975.

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 19

GEOGRAPHICAL DESCRIPTION: Middle and Upper Kuskokwim River

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Mortality

The total reported grizzly bear kill in Unit 19 during 1982 was 19 bears, including 1 nonsport kill. This was the lowest reported take in 13 years; in comparison, the mean harvest for the last 10 years was 55. Nearly all of the harvest decline was a result of reduced kills in Subunits 19B and 19C. Since implementing the drawing permit system for Subunit 19B in 1981, the average harvest has declined to 3.5 bears annually, compared to an average of 24.6 bears annually for the period 1971-81. There were no applicants for the 9 permits available for Subunit 19B during the spring hunt, although 1 bear may have been illegally taken. Of the 14 permittees who drew permits for the fall hunt, 2 killed bears. Seven of the permittees, including both successful hunters, were nonresidents. A similar decline in harvest occurred in Subunit 19C, however, where permits are not required. Only 9 bears were killed in this Subunit compared to the previous annual average of 23.

Although nonresidents using guides continued to account for most of the Unit 19 harvest in 1982, fewer guides operated in 1982. Only 11 guides had clients who took 15 bears; this compares with 30 guides whose clients took 64 bears in 1979.

Management Summary and Recommendations

The 1982 grizzly bear harvest in Unit 19 was the lowest since 1969. Most of the reduced harvest was a result of fewer guides with fewer clients operating in Unit 19. Recent substantial fines, confiscation of aircraft, and jail terms apparently served as a deterrent to illegal operation by guides. The pattern of guides operating in Units 19 and 17 when the season was closed in Unit 9 was also broken in 1982. Many guides who operated in Unit 19 stated that they had difficulty booking bear hunters, probably a reflection of the overall poor worldwide economy during 1982.

The permit requirement in Subunit 19B has probably been the major factor responsible for reducing bear harvests in 19B. This reduction in hunting pressure may have allowed the population time to recover. There has only been 1 applicant for bear permits in the last 2 spring seasons. Hence, the permit requirement for spring hunts could be dropped without jeopardizing the recovery of the bear population in Subunit 19B.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 20

GEOGRAPHICAL DESCRIPTION: Central Tanana-Upper Yukon Valley

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Although data regarding the population status of grizzly bears in Unit 20 are lacking, casual observations and other indices suggest the population is moderate in size and stable in most areas.

Mortality

According to bear sealing data, 49 bears were harvested from Unit 20 during 1982 (Table 1), which included 2 bears taken in defense of life or property in Subunit 20E. In comparison, 57 were taken during 1981; the 21-year mean annual harvest is 36 bears. Harvests declined in Subunits 20A, 20B, 20D, and 20F; remained the same in 20C; but increased in Subunit 20E. Subunit 20A showed the largest decline where the harvest was 61% smaller than last year (9 vs. 23 in 1981). The reduced harvest was due primarily to changing the fall season opening date from 1 September to 15 September . In contrast, the Subunit 20E harvest increased from 9 in 1981 to 20 in 1982, a 122% increase. This increase was probably due to promotional efforts by the Department to increase hunting in the Subunit and to the incidental harvest of bears killed during recently liberalized moose and caribou seasons.

Sex and age of bears harvested do not indicate heavy exploitation. Males (29) composed 59% of the harvest, about the same as last year. The mean age of all bears killed was 10.2 years, ranging from 2.8 to 21.4 years for males ($\bar{x}$ = 9.4 years), and from 2.8 to 25.8 years for females ($\bar{x}$ = 11.8 years). The mean age of all bears harvested in Unit 20 since 1969 has been 7.2 years.

Management Summary and Recommendations

Attempts to increase the bear harvest in Subunit 20E have been successful with the harvest increasing from 4 in 1980 to 20 in

1982. Twelve bears were taken from the upper Fortymile River/Mosquito Fork areas, where Departmental wolf control efforts have been most intensive and where the Department preferred to reduce the number of bears.

The objective of reducing the bear harvest in Subunits 20A and 20C east of the Nenana River was also achieved, with only 13 bears taken from this area. Thirty-one bears had been harvested there last year. Although present harvest levels may cause bear numbers to slowly decline, the present season should be continued for at least another year to ascertain the effects of the new hunting season. In addition, a lower bear population may benefit ungulate survival, particularly in the Yanert drainage which in recent years has experienced low moose calf survival.

Future brown bear management in Subunits 20A and 20E will require balancing bear and ungulate populations to attain management goals for both bears and ungulates.

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Table 1. Grizzly bear harvest by Subunit, 1982.

Subunit	Spring	Fall	Total
20A	3	6	9
20B	2	3	5
20C	2	9	11
20D	0	4	4
20E	6	14	20
20F	0	0	0
Totals	13	36	49

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 21

GEOGRAPHICAL DESCRIPTION: Middle Yukon (Tanana to Paimiut)

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Field observations, nuisance reports, hunter sightings, and pilot observations indicate a moderately dense, stable grizzly population in Unit 21.

Mortality

Hunting pressure on bears in Unit 21 continues to be low. Two bears were harvested by hunters in the spring and 8 were taken in the fall. In addition, 2 bears were taken in defense of life or property. Of the 10 bears harvested by hunters, 4 were taken by nonresidents specifically hunting grizzly bears, and 6 were harvested during moose hunts. The breakdown by Subunit of the harvest, including those bears taken in defense of life or property, is 21A, 1; 21B, 2; 21C, 2; 21D, 7; and 21E, 0.

Since 1961, annual harvests have had an insignificant impact on the bear population in Unit 21. Although the average harvest has increased since 1980 (from 1961 through 1979 the harvest averaged 2.3 animals) to 11 bears per year, a much greater harvest could be sustained. Presently, however, hunter interest in grizzly bear hunting in Unit 21 is low. Nuisance bears continue to bother fish camps, smokehouses, and trapping camps. The fall season was lengthened to 31 December in 1982, and 1 bear was taken by a trapper during November. Presently, seasons are adequate to provide hunting opportunities for hunters and allow for the taking of nuisance bears during early winter.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 22

GEOGRAPHICAL DESCRIPTION: Seward Peninsula

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Miners and reindeer herders are thought to have exerted heavy hunting pressure on the Unit 22 grizzly bear population during the early 1900's. Although accurate records are not available, the bear population probably reached its lowest level 30-40 years ago. Since that time, however, the bear population on the Seward Peninsula has increased slowly, reaching densities near carrying capacity 10-20 years ago.

From 1974 through 1978, the spring bear season lasted 2 weeks (10 May-25 May).

In response to requests from local residents and the reindeer industry, the 1979 spring season was opened 2 weeks earlier than in previous years. This liberalized season attracted a number of guides to the area, and the bear harvest increased dramatically (Fig. 1). During the 1979 and 1980 seasons, the known annual harvests were 50 and 31 bears, respectively. This harvest exceeded sustained yield in several major drainages. Regulations implemented by the Game Board effectively reduced the nonresident harvest in 1981 because nonresidents were required to obtain a permit and the spring season was again shortened to 2 weeks. Coincidentally, the Guide Board allocated restricted guide areas within those portions of the Unit not already assigned to individual guides. However, such restrictions did not apply to residents. This advantage, coupled with a growing local interest in taking bears, increased the resident harvest from 12 in 1980 to 21 in 1981. Even though the grizzly bear harvest during 1979, 1980, and 1981 was high compared to previous years, observations made by biologists conducting other fieldwork, together with comments from local residents and guides, indicated that bears still remained fairly abundant in Unit 22. Grauvogel (1982) estimated the grizzly population on the Seward Peninsula to number 370-645 bears. Because more recent data were not available, these values were used again this year.

Population Composition

No data were collected during the reporting period.

Mortality

During the 1982 calendar year, 15 bears were legally harvested from the Seward Peninsula; of these, 67% (10) were taken in the spring, and 33% (5) were taken in the fall (Table 1). The Unit 22 recorded harvest represents 2% of the entire Statewide harvest for the reporting period. As in past years, the harvest consisted primarily of males; the sex composition was 73% (11) males and 27% (4) females. These values are consistent with the recorded Unit 22 harvest over the past 21 years (78% males and 22% females). Alaskan residents accounted for 80% (12) of the total harvest; of these, 75% (9) were taken by residents of Nome. Conversations with Nome hunters indicated that all of these bears were taken for recreational purposes. Nonresidents only accounted for 3 bears (20% of the legal harvest), a value somewhat lower than last year's harvest and considerably lower than the harvests of 1979-1980 (Table 1). The entire spring harvest took place during the 1st 16 days of the season. This early success was probably due to good weather and favorable snow conditions which rendered much of the peninsula accessible to snowmachines and ski-equipped aircraft.

Seven bears were known to be illegally taken during the reporting period. Four of these (a sow and 3 cubs) were found at the headwaters of the Flambeau River (Subunit 22C), while the other 3 (adults, sex unknown) were killed by a reindeer herder in the Feather River drainage (Subunit 22C) and not reported. Including these 7 animals, the total known harvest was at least 22 bears. Although the actual harvest is not known, I estimate that 25-35 bears were killed.

The known harvest of grizzly bears for the reporting period came from 9 drainages located in Subunits 22A-22D (Table 2). As in past years, the major drainages in the Nome area (Subunit 22C) received the highest hunting pressure and consequently produced most of the harvest (14 bears).

The mean age of the 15 bears legally harvested was 8.1 years. The oldest animal was a male, estimated to be 21.8 years of age, and the youngest was a female, estimated to be 2.4 years old. The mean age of all males harvested was 7.4 years; the mean age of all females harvested was 9.9 years. Because the harvest sample within the Unit was small ($\bar{N}$ = 15), the data should only be used to determine long-term trends rather than to compare ages over a shorter time span. If comparisons are to be made, age of male bears should probably be used because the harvest over the last 12 years has been 80% male (73% in 1982). The average age of harvested males over the last 12 years was 8.1 years, a value only slightly higher than this year's average of 7.4 years.

Management Summary and Recommendations

The known harvest was reported to have taken place in 9 drainages located within Subunits 22A-22D, with the Nome area (Subunit 22C) having the highest recorded harvest (14 bears). The total area within Unit 22 is approximately 22,977 mi^2. Subunit 22C accounts for only 1,800 mi^2, but supports the highest hunting pressure and harvest. This small area cannot sustain a harvest of this magnitude unless bears are moving into Unit 22C from other areas.

Reliable estimates of the bear population on the Seward Peninsula are not available. Grauvogel (1982) calculated the number of bears that would be taken at densities of 1 bear/35 mi^2 and 1 bear/64 mi^2 if 5%, 8%, and 10% of the population were harvested (Table 3). Judging from bear research work previously conducted in GMU's 9, 13, and 26A, Grauvogel (1982) believed that a 5% harvest for the Seward Peninsula was probably a safe minimum, and that 10% was a questionable maximum. If these values are correct, a harvest of 30-40 bears annually should be a safe estimate of sustained yield. As indicated above, 25-35 bears were taken on the peninsula during the reporting period, a number falling within the acceptable range.

Because population density information is incomplete and because reindeer herders advocate reduction of bear numbers, a research study should be initiated in the near future to determine bear population characteristics within the Unit. Without this information, it is difficult to make sound management decisions and recommendations. A more active enforcement program is also needed to increase the reliability of harvest information.

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Fig. 1. Annual Unit 22 grizzly bear harvest, 1976-82.

Table 1. Unit 22 grizzly bear harvest by residency status, 1976-1982.

Year	Resident kill			Nonresident kill			Total kill			Nonresident kill as % of harvest
	Spring	Fall	Total	Spring	Fall	Total	Spring	Fall	Total	
1976	4	5	9	1	1	2	5	6	11	18
1977	5	2	7	2	3	5	7	5	12	42
1978	4	2	6	4	4	8	8	6	14	57
1979	7	5	12	33	5	38	40	10	50	76
1980	10	2	12	15	4	19	25	6	31	61
1981	15	6	21	1	6	7	16	12	28	25
1982[a]	10	2	12	0	3	3	10	5	15	20

[a] Values do not include 7 bears taken illegally during reporting period.

Table 2. Unit 22 grizzly bear harvest by Subunit and drainage, 1982.

Subunit/ drainage	Male	Female	Unknown	Total
22A				
Ungalik River	1	2	0	3
22B				
Fish River	0	1	0	1
Koyuk River	2	0	0	2
22C				
Eldorado/Flambeau River	3	0	4[a]	7
Soloman River	1	0	0	1
Bonanza River	1	1	0	2
Feather River	1	0	3[b]	4
22D				
Pilgrim River	1	0	0	1
Kuzitrin River	1	0	0	1
Totals	11	4	7	22

[a] Sow and 3 cubs, discovered shot and abandoned.
[b] Three adult bears, killed by reindeer herders.

Table 3. Hypothetical Unit 22 grizzly bear take as a function of density and harvest rate (Grauvogel 1982).

Assumed density	Population size	Harvest rate		
		5%	8%	10%
1 bear/35 mi^2	643	32	51	64
1 bear/60 mi^2	373	21	30	37

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 23

GEOGRAPHICAL DESCRIPTION: Kotzebue Sound

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Knowledgeable long-term residents of Game Management Unit 23 agree that local grizzly bear populations have increased over the last 20 years, consistent with trends throughout much of Alaska. Direct estimates of bear populations in Unit 23 are not available, but extrapolations from densities in adjacent portions of Unit 26 suggest the Unitwide population to be approximately 1,000. The recovery follows a Statewide depression in bear numbers attributable in part to U.S. Fish and Wildlife Service wolf poisoning efforts that are thought to have incidentally destroyed many bears prior to Statehood. Bear populations have been steadily increasing since poisoning efforts were discontinued.

Population Composition

The only available data concerning population composition are those obtained from sealing certificates. The small sample size, together with hunter bias, prevents the use of this information for accurately determining population characteristics.

Mortality

In response to requests from local advisory committees and from subsistence hunters, the Game Board opened the 1982 spring season on 15 April (25 days earlier than in the previous year). The spring of 1982 was much colder than in past years; temperatures remained below zero in early May. This unusually late cold weather allowed hunters to use surface transportation for a longer period than usual. Fish and Wildlife Protection and Game Division personnel responded by increasing efforts to seal bears and to determine the spring harvest.

Thirty bears were sealed in 1982 (Table 1), 14 in spring and 16 in fall. State personnel determined that at least 12 bears, and perhaps as many as 20, were taken by local residents during the spring season but were not sealed. I therefore estimate the total harvest to be about 50 bears.

Nonresident guided hunters killed 6 bears during the fall season and none during spring (Table 1). Alaska residents from outside Unit 23 killed 12 bears, 9 during fall and 3 during spring. Local residents killed at least 12 bears, 2 in fall and 10 in spring. Male bears composed 68% of the harvest ($\underline{N}$ = 28), slightly less than the 1961-82 average of 76%. The mean age of harvested males was 7.8 years, ($\underline{N}$ = 15) compared with the 22-year average of 8.3 years. The mean age of females was 13.5 years ($\underline{N}$ = 9), compared with the 22-year average of 7.7 years. Eight of the 9 females reported were breeding-age sows older than 5 years of age.

Management Summary and Recommendations

Both spring and fall nonresident permit hunts were undersubscribed, attributable in part to a worldwide economic slump and the increased value of the U.S. dollar relative to other currencies. The permit system has helped control overexploitation of bears by guides and should be retained.

Bears taken in Unit 23 must be sealed within the Unit. To date, 6 Alaskan residents who killed bears in Unit 23 sealed their bears in other Units. None of these people, all of whom were attempting to comply with the regulations, was cited. Because of the permit system and restricted guiding areas, the within-Unit sealing requirement now appears unnecessary for controlling the nonresident harvest and should be eliminated.

Local awareness of, and compliance with, bear regulations is unacceptably low. For example, the resident tag and sealing requirements, and the bag limit of 1 bear every 4 years are largely unknown or ignored. Under current regulations (5 AAC 81.215) it is quasi-legal to leave the hide and skull in the field as long as the meat is salvaged. This ambiguity contributes to our lack of accurate harvest information. The regulation should be clarified.

Information on bear regulations was distributed to all boxholders in Unit 23 villages, and radio announcements explaining the regulations were aired on the Kotzebue radio station. Efforts to inform and educate local hunters should continue. Fish and Wildlife Protection should be encouraged to maintain higher visibility in the villages.

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Table 1. Reported Unit 23 brown/grizzly bear harvest by residency status, 1982.

Residency	Hunt	
	Spring	Fall
Residents (local)	10	2
Residents (nonlocal)	3	9
Nonresidents	0	6
Totals	13	17

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 24-26

GEOGRAPHICAL DESCRIPTION: Brooks Range

PERIOD COVERED: 1 January 1982-31 December 1982

Season and Bag Limit

See Hunting Regulations No. 22 and 23.

Population Status and Trend

Research conducted in the Brooks Range showed that grizzly bear density within this large area ranges from 1 bear/17-300 mi^2, with an average density of about 1 bear/100 mi^2. Based on these densities and food availability within various areas, the Brooks Range Units are estimated to have a minimum population of 2,000-2,400 grizzlies. However, because of the very low reproductive capacity of these bears, only about 2% of the population (40-50 bears) should be harvested annually. To reduce the chance of overharvest, the Board of Game passed regulations establishing permit hunts for grizzlies in the Brooks Range and coastal plain portions of these Units beginning with the 1977-78 regulatory year.

Grizzly populations in Subunit 26B are likely beginning to recover from previous overharvest. Population trends in Units 24 and 25, Subunit 26C, and eastern Subunit 26A are probably stabilized or growing; in western Subunit 26A, numbers are probably increasing.

Population Composition

Recent population composition data are available only for the western Brooks Range near the headwaters of the Utukok and Kokolik Rivers. In that area, approximately 40% of the bears >1 year were males and 60% were females. The sex ratio of cubs and yearlings was probably equal but may slightly favor females. Percentages of bears by age classes were as follows: cubs, 13.0%; yearlings, 10.7%; 2-year-olds, 13.7%; 3- and 4-year-olds, 10.7%; and >5 years of age, 51.9%.

Quantified parameters of grizzly bear reproductive capacity for the eastern Brooks Range (1973-75 data) and western Brooks Range (1977-82 data) are as follows (listed as eastern and western Brooks Range, respectively): mean age at production of 1st litter of 10.1 and 8.0 years; mean litter sizes of 1.8 and 2.0 cubs; reproductive intervals of 4.2 and 4.0 years; and mean reproductive rates of 0.42 and 0.50 cubs/year.

Mortality

The permit system in the Brooks Range has continued to effectively prevent overharvest. During 1982, 37 grizzlies were taken in Unit 26 and the portions of Units 24 and 25 where permits were required (Table 1). A large portion of the Gates of the Arctic National Park is within the Unit 24 permit hunting area; hunting by local residents for subsistence purposes was allowed and accounted for 2 kills. Sport hunting is not allowed within the park; hunting pressure in the remainder of the Unit was low.

Management Summary and Recommendations

Grizzly bear harvest in the Brooks Range was lower than, or within, levels appropriate for the populations in the various Units. In Unit 25, the take has increased due to additional guides establishing exclusive guiding areas in the Unit, but the harvest was not excessive. The western portion of Subunit 26A has received only light hunting pressure but has a relatively high bear population. A greater harvest could be sustained in this area, especially during spring seasons where females are not vulnerable to sport hunting. Similarly, preliminary research data from northern Subunit 26C indicate a greater harvest may be safely taken there. Harvest in areas outside the permit areas in Units 24 and 25 were within sustainable levels.

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Table 1. Sport hunting harvest of grizzly bears in Units 24-26, 1977-82.

GMU	Estimated population	Est. max. harvest	6-year mean	Harvest 1977	1978	1979	1980	1981	1982
Permit areas									
24	165-200	6	8[a]	10	12	2	9	7	1
25A	260-300	10	8[a]	13	4	10	5	9	15
26A west	225-275	7	4	2	2	1	8	6	2
26A east	250-300	8	5	7	5	5	5	5	11
26B	120-180	5	5	8	3	5	8	2	4
26C	100-150	2	2	3	4	1	1	1	4
Totals	1,120-1,400	38	32	43	30	24	36	30	37
Nonpermit areas									
24	[b]	[b]	5	1	8	5	4	5	3[c]
25	[b]	[b]	9	11	10	14	8	1	4
Totals			14	12	18	19	12	6	7

[a] These figures include reported harvest only; additional illegal harvest very likely took place within permit areas and was reported as outside permit areas.

[b] Not calculated.

[c] Includes 1 nonsport kill.